

**Prevention and Control of
Noncommunicable Diseases in the
Republika Srpska,
Bosnia and Herzegovina**

The case for investment





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Abstract

This report is the result of the initial phase of a project to develop an investment case for interventions aimed at the prevention and control of noncommunicable diseases (NCDs) in the Republika Srpska, Bosnia and Herzegovina. It considers the current NCD health and economic burdens along with current risk levels, the healthcare institutional context, potential barriers to change, as well as current NCD policies.

Noncommunicable diseases such as cancer, cardiovascular disease, diabetes and chronic respiratory disease (or chronic obstructive pulmonary disease) pose a significant threat to health and economic development in the Republika Srpska, Bosnia and Herzegovina. Already, NCDs are collectively the leading cause of death and the total economic toll is roughly 6.4% of its gross domestic product. An ageing population, high levels of tobacco consumption, poor diet, excess weight, hypertension and air pollution are among the drivers of NCDs in the Republika Srpska. Although some positive efforts to reduce risks and improve NCD diagnosis and care have taken place, these are insufficient to comprehensively address this burden.

Research for this report examined the costs and benefits of five intervention packages which could play a role in addressing the NCD burden in the Republika Srpska. While all could yield important benefits, two in particular – reducing salt consumption and tobacco control – would lead in the next 15 years to economic growth which far outpaced the size of the investment in the measures themselves. Together, the two packages would likely save more than 6,250 lives over the next 15 years.

This report, drafted by United Health Futures, draws on inputs from a United Nations Development Programme Institutional Context Analysis which examined the institutional, governmental, and stakeholder arrangements and relationships relevant to managing, preventing and controlling NCDs in the Republika Srpska. The methodology for the analysis is provided in Appendix A. In addition, a team from the Russian National Research Centre for Preventive Medicine provided an extensive economic analysis which, for this report, looked in depth at the economic burden which NCDs pose for the Republika Srpska, as well as determining the return on investment of several potential interventions to lessen the burden of NCDs. The methodology for the economic analysis can be found in Appendix B.

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Main findings

NCD INVESTMENT CASE – REPUBLIKA SRPSKA, BOSNIA AND HERZEGOVINA

Burden

NCDs cost the economy 800 million BAM in 2021

The economic cost of NCDs to the Republika Srpska was 800 million BAM in 2021, equivalent to 6.4% of its annual gross domestic product (GDP) that year. Premature morbidity and mortality due to NCDs limit the Republika Srpska's socioeconomic development by reducing productivity and inflating the costs of health and social care. In 2021, the government spent an estimated 238 million BAM on the four major NCDs (cancer, cardiovascular diseases, diabetes and chronic respiratory diseases), representing over 25% of total health-care expenditure.

54%

Of the total economic burden to the Republika Srpska, 54% was losses attributable to premature deaths in 2021. A large and rising proportion of these deaths occur prematurely, meaning before the age of 70.

Investment benefit

By acting now, the Government of the Republika Srpska can reduce the burden of NCDs. The investment case findings demonstrate that investing in proven policy and clinical packages would, over the next 15 years:

325 million BAM

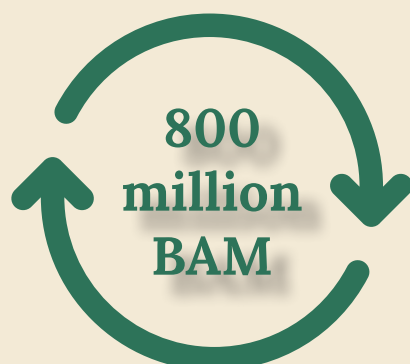
Provide significant economic benefits (325 million BAM) over a 15-year period. The return on investment for most interventions is positive, and the highest for interventions on salt reduction (1:39), followed by tobacco (1:4.3), alcohol (1:4), and physical activity (1:2). The clinical interventions package had an ROI below 1 due to high costs of medical treatment, however these interventions are an integral part to improving NCD care and provide significant productivity benefits.

Save 9,000 lives

Save over 9,000 lives and reduce the incidence of disease. The clinical intervention and tobacco control packages lead to the highest averted mortality. Moreover, investing in all interventions over 15 years can avert over 11,000 strokes and 9,000 cases of acute ischaemic heart disease.

Main findings

NCD INVESTMENT CASE – REPUBLIKA SRPSKA, BOSNIA AND HERZEGOVINA



Return on investment over a 15-year period

Intervention package	Return on investment	Lives saved	Millions of BAM in productivity benefits
Salt reduction	38.9	5,217	181
Tobacco	4.3	1,048	37
Alcohol control	4.03	370	38
Physical activity awareness	2.2	125	5
CVD and diabetes clinical interventions	0.08	2,251	65

Executive summary

Responsibility for healthcare in Bosnia and Herzegovina

The Dayton Peace Agreement of 1995 established Bosnia and Herzegovina as a state with two entities each with a high degree of autonomy: the Republika Srpska and the Federation of Bosnia and Herzegovina. In 2000, the self-governing Brčko District of Bosnia and Herzegovina was also created.

Health policy decision-making is devolved to the sub-state level. The Republika Srpska has a centralized health system with key authority held by the Ministry of Health and Social Welfare (MOHSW) of the Republika Srpska.

A pressing health and economic burden

Noncommunicable diseases (NCDs) are exacting a serious health and economic toll on the Republika Srpska, Bosnia and Herzegovina (hereinafter “the Republika Srpska”). In the years before COVID, they were already responsible for a majority of deaths there. In 2021, cardiovascular diseases (CVDs) accounted for around half of all deaths in the Republika Srpska; cancers about one in five; and endocrine and respiratory disease one in ten. With the ongoing decline in COVID-related mortality, these patterns will re-emerge.

The healthcare system is struggling with this burden. One illustration comes from data provided by the Republika Srpska’s population-based cancer registry. Between 2005 and 2015, the age-standardised mortality rate of cancer among men stayed, with minor variations, around 120 per 100,000. By 2018 – the last year for which data are available – it jumped to 142.0. For women, the 2018 rate was 76.3 per 100,000, well above the long-term plateau of around 70 for much of the previous decade. Moreover, even amid the heightened death toll from COVID-19 in 2020, about one in six of all deaths in the Republika Srpska were premature ones from CVD or cancer – which better prevention and care could likely have avoided.

Accurate, recent NCD incidence and prevalence figures are unavailable except from the cancer registry. Between 2015 and 2018, the male age standardised incidence rate increased by 9.5% per year and that for women by 5.8%. For diabetes, the proportion of people under treatment (around 6%) falls well short of the best estimates of the share of the population affected (between 9% and 12%). Meanwhile, a roughly one-third drop in the number receiving hospital treatment for CVD during the COVID pandemic almost certainly reflects undertreatment, and therefore portends an even greater burden from these diseases in the years to come.

Finally, anticipated demographic changes mean that the burden on the healthcare system will only increase. A projection based on the Republika Srpska's changing age structure suggests that, without better prevention and management, the absolute number of CVD deaths will rise by 71% by 2050 and those from respiratory disease by 47%.

NCDs also exact a marked financial toll on the healthcare system of the Republika Srpska as well as on the economy. Recent estimates suggest that the aggregate direct government and mandatory insurance costs of care for cancer, CVD, endocrine diseases (mostly diabetes), and chronic obstructive pulmonary disease (COPD) come to 238.5 million BAM, nearly 30% of government healthcare spending from these sources. The indirect costs, largely from the impact of NCDs on the ability of people to work, are more than twice as high, 563 million BAM. The combined economic burden, over 800 million BAM, is the equivalent of 6.4% of annual gross domestic product (GDP).

Substantial NCD risks arising from lifestyles and the environment

The population in the Republika Srpska experiences levels of several lifestyle-related and environmental risks which, if left unchecked, will drive NCD incidence in the years to come.

Tobacco consumption: A large 2019 academic survey found that 40% of the adult population used tobacco, almost all of whom did so daily. This figure represents an increase from the 31% who reported smoking in the 2010 government Population Health Survey. An analysis of Global Youth Tobacco Surveys in the Republika Srpska over the years also indicates a rise in the proportion of those aged 13 to 15 using tobacco. Finally, second hand smoke exposure is commonplace: 93.5% report experiencing it inside bars and nightclubs, and 86.0% say the same of restaurants.

Harmful alcohol consumption: Over half of the adult population have 2 to 3 drinks per week or more; 10% of youth (aged 15 on average) have been intoxicated in the past month; and 10.5% of the population say that they, or one or more people in their family, are alcoholics.

Physical activity and weight: In 2023, a third of respondents to a substantial academic survey of metabolic risks in the Republika Srpska did not meet the WHO-recommended levels of physical activity and half were overweight or obese.

Hypertension: In 2010, 38% of the population had full hypertension (26%) or stage I hypertension (12%).

Air pollution: Air monitoring stations in 2020 and 2021 in Brod, Prijedor, and Banja Luka recorded annual levels of PM_{2.5}, PM₁₀, and nitrogen dioxide well above current WHO recommendations. Indeed, Bosnia and Herzegovina as a whole has, by some metrics, the most polluted air in Europe and is estimated to have the highest per capita rate of years of life lost on the continent from excess PM_{2.5} levels.

Health system characteristics undermine the effectiveness of the response to NCDs

Although the healthcare system in the Republika Srpska aspires to universality, in practice around a quarter of those registered with primary care providers were uninsured in 2020 (before the COVID pandemic led the government to decree temporary full coverage for all). This lack of universal engagement with the health system impedes case finding, which likely helps explain the divergence between the number of people under treatment for given NCDs and the best estimates of their prevalence.

A focus within the system on medical interventions leaves limited resources available for prevention. Aims to institute breast and cancer screening programmes, for example, have been announced but are still not yet implemented. Money for innovation is also highly limited: even the National Action Plan for the Prevention and Control of Noncommunicable Diseases in Republika Srpska, 2019-2025 (the "NCD Action Plan") stated a need to find foreign funding before it could be implemented.

Funding of care is also limited, with a lower outlay per person than in every EU country and Serbia. The health system is understaffed and efforts to provide better organisation of NCD care have been announced but practical implementation has not occurred.

Highly limited public awareness of NCD risks makes any response harder

Public understanding of NCDs and their attendant risks, as well as of the need for behaviour change toward healthier lifestyles, is very low in the Republika Srpska, with insufficient efforts aimed at public education.

Republika Srpska has taken initial, but limited, steps toward addressing the NCD burden overall

Current efforts that address NCDs as a group fall into several categories:

Formal policies and plans: Several government policies are relevant to NCD prevention and management, but the core one is the National Action Plan for the Prevention and Control of Noncommunicable Diseases in Republika Srpska, 2019–2025. It encompasses various goals along four axes: Management; Disease prevention and health promotion; Health system strengthening; and Supervision, monitoring, evaluation and research. The goals listed under these axes, however, are general rather than specific or detailed. Moreover, little capacity exists to monitor how effective any program might be.

Improvements to primary care: For many years, the Ministry of Health has engaged in various efforts to improve the ability of primary care facilities to diagnose and manage NCDs. The two most prominent of these are: the development of 37 community mental healthcare centres, with services now set for strengthening under the Strategy for the Development of Mental Health in Republika Srpska (2020–2030). In addition, a program to improve cardiovascular risk assessment and management, by 2019 gave 64% of the population access to standardised, evidence-based, preventative CVD services through primary care.

Policies to address specific NCD risks are limited, often weak, and tend to be poorly enforced

Tobacco control: The tobacco control regime in the Republika Srpska lacks comprehensive legislation, relying instead on a mix of laws and codes. This body of regulation falls short of WHO recommendations in key areas, as the rules: allow designated smoking areas in most facilities; do not require graphic warnings on packaging; and do not cover vaping. Smoking cessation assistance has highly limited availability. Meanwhile, smoking bans are inadequately enforced, second hand smoke is ubiquitous in bars, restaurants and clubs, and around a third of cigarettes sold are from illicit sources.

Reduction of harmful alcohol consumption: Much of the relevant regulation in this field has been instituted at the Bosnia and Herzegovina state level, notably some (low) taxes and restrictions on how alcohol is portrayed in TV and radio broadcasts. The Republika Srpska's laws also tend to be limited, if still useful, such as a ban on the sale of alcohol to minors and to those already intoxicated. Even these are not always enforced.

Sodium, fat, and sugar reduction in diets: The Republika Srpska does not appear to have any regulations aimed at the reduction of sodium, fat, or sugar in diets, nor is consumption of these ingredients monitored. According to the NCD Action Plan, officials are meant to be reviewing international best practice in this field. The main government initiatives in this area to date have been multi-stakeholder ones to improve the quality of food for children and in schools. These are positive but narrowly focused.

Physical activity: There is no evidence of the implementation of policies to improve levels of physical activity. According to the NCD Action Plan, officials are reviewing international best practice in this field.

Air quality: There is no evidence of the implementation of policies to improve air quality. According to the NCD Action Plan, officials are reviewing international best practice in this field.

Several cost-effective intervention packages exist to reduce the NCD burden in the Republika Srpska, with sodium control and enhanced tobacco control displaying high cost-benefit ratios

Research conducted for this report examined the potential benefit of implementing five packages of interventions, made up of WHO “best buys” – programmes which have been shown to be cost-effective in numerous cases. Four of the packages consisted of population health measures – tobacco control, improved awareness of the benefits of physical activity, reduction in harmful alcohol consumption, and reduction in sodium consumption – and one was made up of clinical interventions related to diagnosis and control of CVD and diabetes.

All saved lives. The policy interventions also reduced NCD incidence, which had the attendant result of increasing economic output by maintaining workforce health. The sodium and tobacco control packages yielded the highest ratio of benefits to cost: one BAM’s investment in the sodium-related measures yields more than 38 BAM in greater economic growth over 15 years, and the equivalent figure for tobacco control was more than 4. The other population health packages also had benefits greater than costs over the same period.

The clinical intervention package cost more than the benefits it yielded in terms of enhanced economic output. Healthcare officials should nevertheless consider the elements of the package given the improvement in the quality of life they can bring to those with CVD and diabetes.

Abbreviations

BMI	Body mass index
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular disease
CVRAM	Cardiovascular risk assessment and management program
DZ	<i>Dom zdravlja</i> (primary health care facilities)
EU	European Union
FCTC	WHO Framework Convention on Tobacco Control
GDP	Gross domestic product
HIF	Health Insurance Fund
ICA	Institutional Context Analysis
ICD	International Classification of Diseases
MOHSW	Ministry of Health and Social Welfare
NCD	Noncommunicable diseases
PPP	Purchasing power parity
ROI	Return on investment
SDC	Swiss Agency for Development and Cooperation
SDR	Standardized mortality rates
STEPS	STEPwise approach to NCD risk factor surveillance
UHF	United Health Futures
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
VAT	Value added tax
WHO	World Health Organization

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Overview of the noncommunicable disease burden in the Republika Srpska, Bosnia and Herzegovina

Responsibility for healthcare in Bosnia and Herzegovina

The Dayton Peace Agreement 1995 established Bosnia and Herzegovina as a state with two entities each with a high degree of autonomy: the Republika Srpska and the Federation of Bosnia and Herzegovina. In 2000, the self-governing Brčko District of Bosnia and Herzegovina was also created.

Health policy decision-making is devolved to the sub-national level. The Republika Srpska has a centralized health system with key authority held by the Ministry of Health and Social Welfare of the Republika Srpska.

The health burden

Noncommunicable diseases (NCDs) are by far the leading cause of mortality in the Republika Srpska, Bosnia and Herzegovina (hereinafter “the Republika Srpska”). Between 2013 and 2019, cardiovascular diseases (CVDs) on their own accounted for between 45% and 50% of all deaths there and cancers for 19% to 22%.¹ The apparent drop in mortality from these conditions in 2020 and 2021 is almost certainly the result of deaths from COVID-19 among individuals with these underlying conditions. For non-COVID deaths in these years, the CVD figures fall into the same range as in the earlier period, and those for cancer are only slightly less (18% and 17% respectively).² As COVID deaths have declined in the Republika Srpska, there is no reason to expect that the pattern from earlier in the decade will fail to reassert itself.

Meanwhile, throughout 2013 to 2021, deaths from endocrine diseases – usually diabetes – and from respiratory ones – often COPD – collectively accounted for around 8% to 10% of deaths in the Republika Srpska.³

This underlying stability in mortality figures does not indicate effective prevention and treatment of NCDs in Republika Srpska. One matter for concern is the relatively young ages of people dying of NCDs. Premature mortality for cancers and CVDs is a rough but useful measure of the proportion of these conditions which are considered preventable through timely diagnosis and management. (It is a percentage calculated by taking the number of individuals in a population who are aged 30 to 70 when they die from a given NCD and dividing that by the total deaths from the same condition for all age groups during the same

1 United Health Futures (UHF) Calculations based on data in Republika Srpska Institute of Statistics, Statistical Yearbook 2022, 2022

2 Ibid.

3 Ibid.

period). Nearly half (49%) of all cancer deaths in the Republika Srpska in 2020 fell into the premature category, a figure little changed from 2012 (48%).⁴ The proportions of premature CVD deaths in these years (18% for 2020; 19% for 2012) are lower than those for cancer. Because, however, of the higher number of people dying from CVD, cardiovascular diseases, caused more premature deaths in total in 2020. Overall, better cancer or CVD prevention and treatment might have avoided up to one in six deaths in the Republika Srpska that year.⁵

Mortality figures in general provide the best overview of this NCD health burden. Incidence figures are much less robust, with the exception of cancers. For these conditions, the regularly maintained population-based Cancer Registry of the Republika Srpska provides a reasonably good picture.

Starting with its data, in 2018, the age-standardised incidence rate for all cancers for men was 271.4 per 100,000 population and 233.8 per 100,000 for women.⁶ These figures represent a substantial jump from those of the past. Between 2005 and 2015, age-standardised incidence saw a steady, but moderate compound average rise of 1.1% per year for men and 3.4% for women. Between 2015 and 2018, however, such growth was 9.5% annually for men and 5.8% for women.⁷ While the 2018 age-standardised incidence figures are still below those for the WHO Europe population as a whole in that year (311.3 per 100,000 for men 239.8 per 100,000 for women)⁸, those of the Republika Srpska will catch up quickly if current growth rates do not diminish.

The Republika Srpska also has a diabetes registry. Unlike that for cancer, however, which draws on multiple sources, the diabetes one includes only people currently receiving care for the condition. According to its 2020 figures, just over 6% of the population fall into this category.⁹ While the evidence for the true prevalence is limited, what exists suggests that the registry figures are an underestimate of the overall diabetes burden. A small Banja Luka study in 2020, for example, found that, using the Finnish Diabetes Risk Score, 12% of women and 16% of men were at high risk of developing the condition.¹⁰ More striking, 2018 research in the same city found that 38% of adults had Metabolic Syndrome, a common precursor to diabetes and other NCDs.¹¹

4 UHF Calculations based on data in Public Health Institute of Republic of Srpska, Population Health 2020, [2021]; Public Health Institute of Republic of Srpska, Population Health 2012, [2013]

5 Public Health Institute of Republic of Srpska, Population Health 2020, [2021]

6 UHF Calculations based on data in: Public Health Institute of Republic of Srpska, Population Health 2020, [2021]; Republika Srpska Ministry of Health and Social Welfare, Акциони план за превенцију и контролу незаразних болести у Републици Српској за период од 2019. до 2026, [2018] (English version used National Action Plan for the Prevention and Control of Noncommunicable in Republika Srpska for the period from 2019 to 2025." [2018].

7 UHF Calculations based on data in Public Health Institute of Republic of Srpska, Population Health 2020, [2021]; Public Health Institute of Republic of Srpska, Population Health 2012, [2013]

8 International Agency for Research on Cancer, European Region Factsheet 2018, 2020

9 UHF Calculations based on data in Public Health Institute of Republic of Srpska, Population Health 2020, [2021]; Republika Srpska Institute of Statistics, Statistical Yearbook 2022, 2022

10 Savić et al., "Ten-year risk assessment," 2020

11 Petrović et al., "Prevalence of metabolic syndrome," 2018

WHO data from 2014 puts the diabetes incidence of the population at between 9% and 10% for Bosnia and Herzegovina as a whole, and the International Diabetes Federation – in its highly respected atlas – estimates that, for adults, it was 12.2% in 2021.¹² These figures seem more likely to represent the prevalence in Republika Srpska than do ones derived solely from the numbers under treatment. Moreover, although Type 1 diabetes is much less common than Type 2, research indicates that its incidence among the young in the Republika Srpska is increasing for unknown reasons.¹³

Data for other NCDs are even less comprehensive than for diabetes. For CVD – the NCD with the highest death toll – officials rely on the number being treated in hospital to gauge the health burden. This does not allow any assessment of how many people are having their cases managed elsewhere in the health system, let alone the extent of the undiagnosed. The most recent figures also, when correctly read, indicate that the CVD burden in the Republika Srpska is likely to grow. After more than a decade of steady increase, in 2018 the number treated for diseases of the circulatory system in hospital there had reached 1,874 per 100,000.¹⁴ In 2020, however, it fell to 1,275 and rebounded only partially the next year to 1,511.¹⁵ This is consistent with the experience across Europe as patients who needed CVD treatment stayed away from hospitals from fear of COVID-19 or because the facilities were overwhelmed by efforts to treat that disease. Heart experts warn that the result will be a substantial increase in the CVD burden in the years ahead as the impact of delayed care makes itself felt.¹⁶

In addition to the apparent growth in the various age-standardised and age-specific aspects of the NCD burden, the Republika Srpska will experience two highly relevant demographic changes: a shrinking population and an ageing one. The Republika Srpska Institute of Statistics projects that the number of people living there will drop by around 18% between 2020 and 2050.¹⁷ Even this figure may be optimistic. The projection does not consider the impact of emigration to countries outside of Bosnia and Herzegovina,¹⁸ a prospect of interest to 46% of those currently aged 18 to 29, according to a UN Population Fund survey.¹⁹

At the same time, the population looks set to age rapidly. According to the Institute's projection, the median age in the Republika Srpska will rise from 44 in 2020 to 52 by 2050. In the same period, the percentage of those aged 65 or over will go up by around half, from 21% to 32%.²⁰ Although a smaller population means, all things being equal, fewer cases of NCDs, age is a

12 WHO, NCD Country Profile: Bosnia and Herzegovina, 2018; International Diabetes Federation, Atlas, 2021

13 Bukara-Radujković et al., "Increase in type 1 diabetes in children," 2018

14 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026; UHF calculations based on Public Health Institute of Republic of Srpska, Population Health 2018, [2019]; Republika Srpska Institute of Statistics, Statistical Yearbook 2022, 2022

15 UHF calculations based on Public Health Institute of Republic of Srpska, Population Health 2020, [2021]; Republic of Srpska Institute of Statistics, Statistical Yearbook 2022, 2022; additional data provided by Public Health Institute of Republic of Srpska.

16 Economist Impact, Covid-19 and cardiovascular disease, 2022.

17 UHF calculations based on Republika Srpska Institute of Statistics, Population Projections Scenario 2, 2020

18 Republika Srpska Institute of Statistics, Population Projections, 2020

19 UNFPA, Survey on Youth Emigration, 2021

20 UHF calculations based on data in: Republika Srpska Institute of Statistics, Population Projections Scenario 2, 2020

risk factor for many of these conditions. Given the Institute's projections, the change in age is likely to have the dominant impact on the NCD burden. If one takes the 2020 age-specific mortality figures for diabetes, cancer, and CVD and applies them to the Institute of Statistics' projected population numbers for the corresponding age groups in 2050, it yields an estimate that – barring improvements in prevention or disease management – demographics alone will be responsible for a 71% increase in the absolute number of CVD deaths per year by 2050, a rise of 15% for cancer, and of 47% for respiratory diseases.²¹

The economic burden

As part of the research for this report, a team working with the WHO Bosnia and Herzegovina country office and health officials in the Republika Srpska, analysed the direct and indirect costs of noncommunicable diseases in the Republika Srpska. For the methodology, see Appendix B.

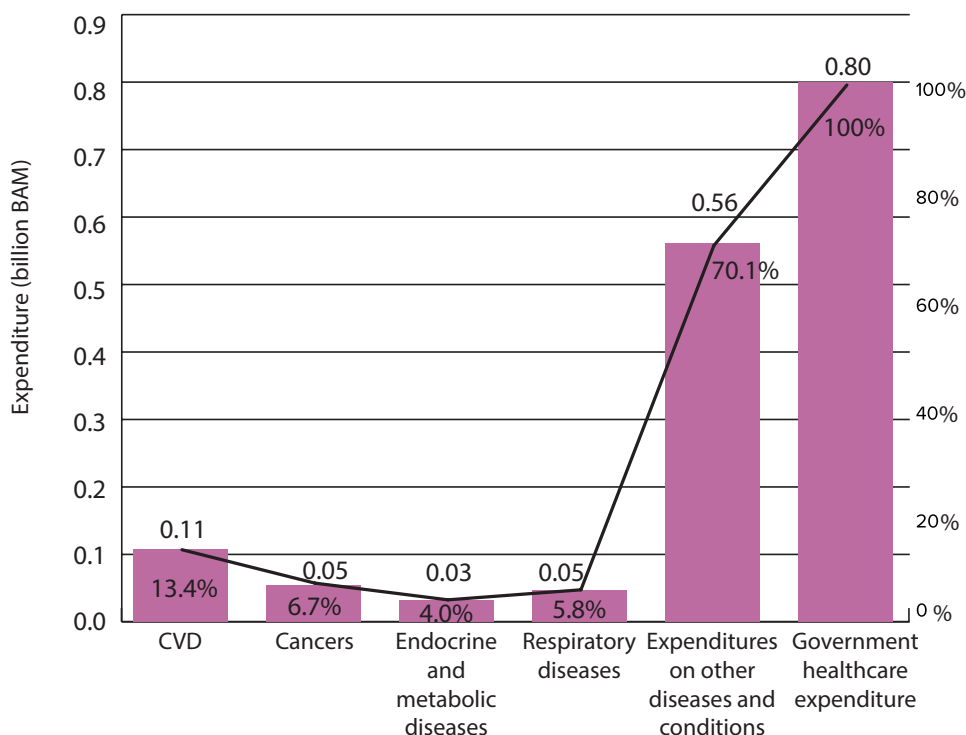
Direct costs

This estimate of the direct economic costs of NCDs encompasses only government and compulsory insurance health-care expenditure. It does not include private out-of-pocket health-care spending – around a third of the total in the Republika Srpska – nor costs to third-party insurers, nor non-health-care costs such as transport. Total healthcare spending for the Republika Srpska in 2021 was 1,193.4 million BAM of which 797.6 million BAM (67.4%) was government expenditure.

Bosnia and Herzegovina's health accounts provide the approximate share of total health expenditure for each NCD group (CVDs, diabetes, cancer and chronic respiratory diseases) across the country. Assuming that these figures are broadly accurate for the Republika Srpska, the estimated annual government spending on the four main groups of NCDs in 2021 was 238.5 million BAM: 106.9 million BAM (13.4% of government health expenditure) on CVD, 53.4 million BAM (6.7%) on cancer, 46.3 million BAM (5.8%) on chronic respiratory diseases; and 31.9 million BAM (4.0%) on endocrine and metabolic diseases (mainly diabetes) (**Fig. 1**).

21 UHF calculations based on data in Public Health Institute of Republic of Srpska, Population Health 2020, [2021]; Republika Srpska Institute of Statistics, Population Projections Scenario 2, 2020.

Fig. 1. Derived government health-care expenditure in the Republika Srpska in billions of BAM, 2021



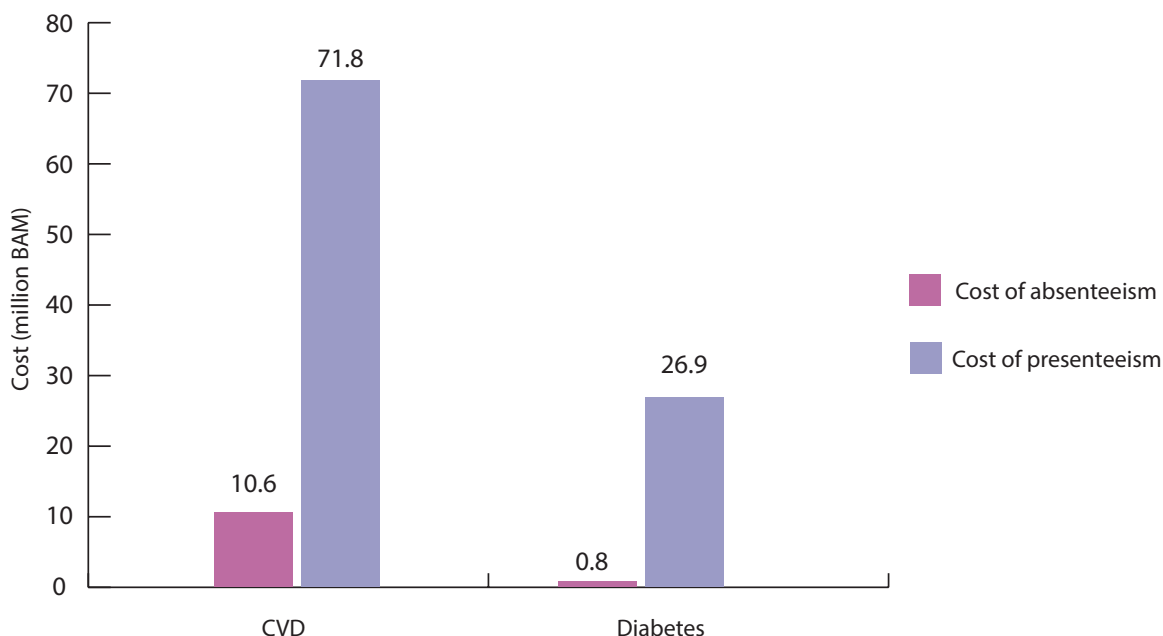
Indirect costs

Indirect economic losses arising from NCDs in the Republika Srpska were calculated – using the human capital method – as the total of those from reduced labour force participation due to increased absenteeism and presenteeism, as well as losses from premature death.

Figure 2 shows the labour force participation results for 2021 for CVD and diabetes. No relevant data were available for chronic respiratory diseases or cancer.

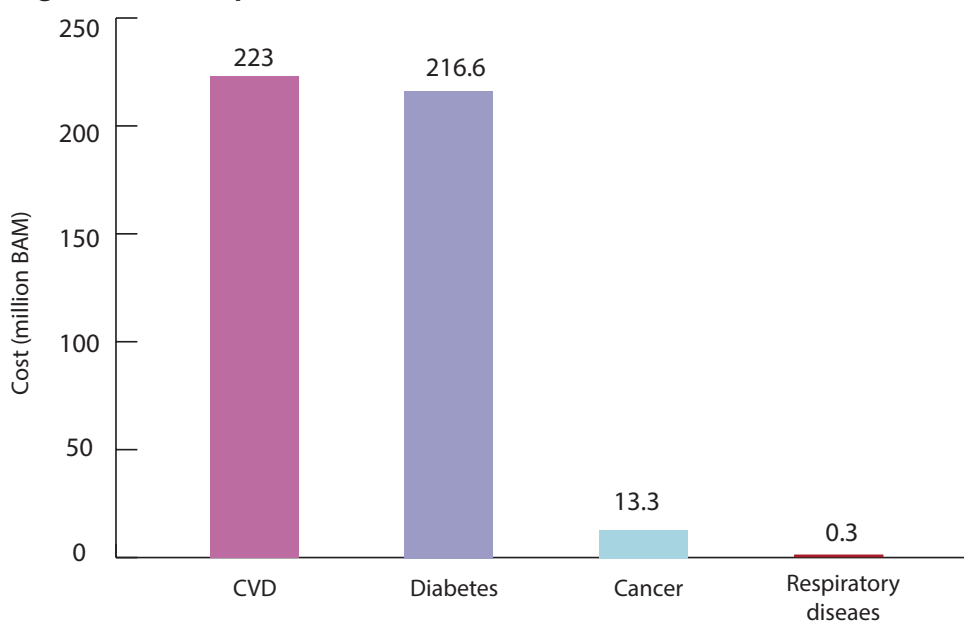
For CVD, the estimated cost of absenteeism was 10,591,316 BAM, and for presenteeism 71,819,859 BAM. The corresponding projections for diabetes were 803,846 BAM and 26,959,765 BAM respectively.

Fig. 2. Costs of absenteeism and presenteeism for CVD and diabetes in millions of BAM, 2021



Under the human capital approach, the costs of premature death are calculated by determining the proportion of the years of life lost within the working population (labour force participation rate multiplied by the age-specific employment rate) from each of the four main NCDs in 2021. This number is then multiplied by the GDP per working person. When aggregated for all four conditions, the estimate for the total cost of premature death came to 452.8 million BAM (**Fig. 3**). Due to their higher premature mortality rates, CVD and cancer give rise to higher costs (223.0 million BAM and 216.6 million BAM, respectively) than do diabetes and respiratory diseases.

Fig. 3. Costs of premature death due to four NCDs in millions of BAM, 2021



Total economic burden

Table 1 summarises the total direct and indirect costs of NCDs in the Republika Srpska. Altogether, these came to just over 800 million BAM in 2021. This represents about 6.4% of GDP that year. The actual total is almost certainly higher, as key data to determine the total costs of NCDs were unavailable. For example, figures did not exist to estimate absenteeism or presenteeism for cancer or chronic respiratory diseases; only government healthcare spending could be included in direct costs; and other costs – such as disability pensions or lost productivity by family carers for those with NCDs – were impossible to estimate.

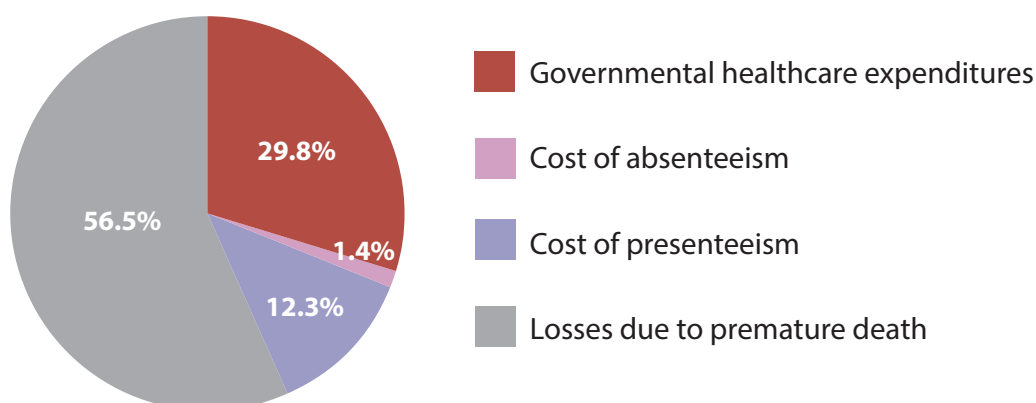
Table 1. Economic burden of NCDs in the Republika Srpska in millions of BAM, 2021

Cost	Cardiovascular diseases	Cancer	Endocrine and metabolic diseases (mainly diabetes)	Chronic respiratory diseases	Total
Direct costs					
Health care					
Government expenditure	106.9	53.4	31.9	46.3	238.5
Indirect costs					
Absenteeism	10.6	NA	0.8	NA	11.4
Presenteeism	71.8	NA	26.9	NA	98.8
Premature deaths	223.0	216.6	13.0	0.3	452.8
Total indirect costs	305.4	216.6	40.8	0.3	563.0
Total	412.3	270.0	72.7	46.6	801.5

NA: not available

Figure 4 shows the structure of the economic burden of NCDs in the Republika Srpska in 2021. The direct costs of NCDs (government and mandatory insurance health-care expenditure) represented only 29.8% – a minority of the total economic burden. The aggregate indirect costs are over two times more, suggesting that the lack of direct investment in NCD prevention and control is exacting a substantial economic, and human, toll.

Figure 4. Structure of the economic burden of NCDs in the Republika Srpska, 2021



The prevalence of selected leading NCD risk factors

The extent of NCD-related risks in the Republika Srpska is difficult to report precisely because the last major government survey, the Republika Srpska Population Health Survey, took place over a decade ago, in 2010.²² Here we present what is available.

Tobacco use

According to the 2010 Population Health Survey, 31.0% of adults resident in the Republika Srpska smoked cigarettes of whom most (28.7% of the total sample) did so daily.²³ A far higher proportion of men (37.5%) than women (27.5%) used tobacco. Since then, consumption appears to have grown more widespread. A large 2019 academic survey found that, by that year, the number of current smokers had risen to 40% of adults, almost all of whom (39.4% of the sample) smoked daily. The research did not break down the sample by gender within Republika Srpska, but for Bosnia and Herzegovina as a whole, it reported that 48% of adult males smoked, compared to 34% of women. If these figures hold even roughly true across the Republika Srpska, it implies that both men and women are using tobacco in increasing numbers.²⁴ Such growth is consistent with an analysis of Global Youth Tobacco Surveys which found that, unusually, those aged 13 to 15 in the Republika Srpska had, over time, become more likely to begin tobacco use and less interested in quitting.²⁵

Surveys of specific groups paint an equally worrying picture. In 2018, the Global Youth Tobacco Survey found that 12% of children aged 13 to 15 in the Republika Srpska use some tobacco product.²⁶

Exposure to second hand smoke also remains a common health risk. For example, in 2010, 53.6% of adults in the Republika Srpska reported exposure to tobacco smoke at their workplaces.²⁷ The 2019 research cited above asked a slightly different question, but found that 26.2% of adults had workplaces where smoking was either permitted everywhere or where no policy existed. A further 26.9% said that smoking was allowed in designated areas. This suggests that the number experiencing exposure to cigarette smoke at work is, at least, unlikely to have declined significantly. Meanwhile, second hand smoke exposure is ubiquitous when socialising: 93.5% report experiencing it inside bars and nightclubs, and 86.0% say the same of restaurants.²⁸

22 The results of the survey itself are not available on line, but much of the relevant information is available in the Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026. The survey data were published as Public Health Institute of Republic of Srpska, Извјештај о резултатима истраживања, 2011 (English, Republic of Srpska Population Health Survey, 2011).

23 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

24 Mičić et al., "Tobacco consumption in 2019," 2020

25 World Health Organization Europe, Summary Results of GYTS in Selected Countries, 2020

26 Global Youth Tobacco Survey, Republic of Srpska 2018 Factsheet, 2018

27 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

28 Mičić et al., "Tobacco consumption in 2019," 2020

Harmful use of alcohol

The data on alcohol use are limited, and much of it dated, but indicate consumption levels consistent with substantial health risks. According to the 2010 Population Health Survey, 22% of men and 5% of women drank alcohol daily²⁹ (compared to 13% and 4% for the EU in 2019).³⁰ More recent but less granular figures from a 2023 academic survey of over 2,000 adults in the Republika Srpska indicate that 54% of the whole adult population have two to three drinks or more per week³¹ (compared to 37% for the EU as a whole in 2019).³²

The consumption also starts young. The Republika Srpska took part in the European School Survey Project on Alcohol and Other Drugs (ESPAD) in 2011. In that year, alcohol use among respondents – with an average age of 15 – was widespread, with 75% having had a drink in the last year and nearly half (47%) in the preceding month. In some cases, this consumption was extensive: 10% admitted having been drunk at least once in the 30 days before the survey was taken.³³

Other data suggest that excessive alcohol use may be common in the Republika Srpska. A small 2020 survey spread across seven municipalities used as its definition of an alcoholic “a person drinking more than he/she can take even after realizing the harmful consequences of one’s alcohol consumption.” It found that 10.5% of respondents said that either they, or somebody in their families, fell into that category.³⁴

Physical inactivity, improper nutrition, and excess body mass

According to the Population Health Survey in 2010, 58% of adults in the Republika Srpska had what it called “low levels” of physical activity.³⁵ This may have improved over time. By 2023, in the large academic survey noted above, 67% of respondents said that they engaged in at least 150 minutes of exercise per week, but this still left a third below healthy levels of activity.³⁶

Also in 2010, only 39% of the adult population ate at least some fresh fruit every day and 48% consumed fresh vegetables daily. More striking, one in five never considered health when choosing a diet.³⁷ The 2023 academic survey did not have objective benchmarks but, even here, 18% of respondents said that their intake of vitamins, fruit, and vegetables was “low” by their own standards.³⁸

30 Eurostat, “Alcohol Consumption Statistics,” web page accessed 25 April 2023, [updated 2021]. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Alcohol_consumption_statistics

31 Majić et al., “Behavioural and Metabolic NCD Risk Factors,” 2023

32 Eurostat, “Alcohol Consumption Statistics,” web page accessed 25 April 2023, [updated 2021]. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Alcohol_consumption_statistics

33 Swedish Council for Information on Alcohol and Other Drugs, 2011 ESPAD Report, 2012

34 Šošo, “Sociological aspects of alcoholism in Bosnia and Herzegovina,” 2020

35 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

36 Majić et al., “Behavioural and Metabolic NCD Risk Factors,” 2023

37 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

38 Majić et al., “Behavioural and Metabolic NCD Risk Factors,” 2023

In 2010, the Population Health Survey found that 22% of the population was obese.³⁹ This has declined somewhat according to the academic survey, which found that 15% fell into this category in 2023. Nevertheless, an additional 35% are currently overweight, meaning that roughly half the population have a body mass that increases their risk of NCDs.⁴⁰

Hypertension

According to the Population Health Survey in 2010, 26% of people had systolic pressure greater than 140 mmHg and diastolic pressure greater than 90 mmHg – the usual definition of hypertension. An additional 12% had systolic pressure greater than 130 mmHg and diastolic pressure greater than 85 mmHg, which is sometimes described as stage I hypertension.⁴¹

More people are getting treatment: between 2009 and 2019 the percentage of adults registered as patients with hypertension more than doubled, to 18.6% of the population. Even at this elevated figure, however, a large number are still not having the condition managed, a factor which likely contributes to the high CVD burden discussed above.⁴²

Air pollution

The Republika Srpska has a substantial air quality problem which is made apparent even by its limited number of monitoring stations. For the smallest particulate matter $PM_{2.5}$, the WHO-recommended safe mean annual limit was set at $5\mu\text{g}/\text{m}^3$ in 2020. According to information in the European Environment Agency database, in 2021 that average was $23.2\mu\text{g}/\text{m}^3$ in Brod and $30.6\mu\text{g}/\text{m}^3$ in Prijedor.⁴³

The WHO recommendation for PM_{10} is $15\mu\text{g}/\text{m}^3$. Here, Prijedor came in at $40.3\mu\text{g}/\text{m}^3$ and Brod $43.3\mu\text{g}/\text{m}^3$.⁴⁴ Although not an official figure, academics deployed three monitors in the Republika Srpska's largest city, Banja Luka. It's average for 2020 – the last year for which full data have been published – was similar to the others, $40.6\mu\text{g}/\text{m}^3$.⁴⁵

Finally, for nitrogen dioxide (NO_2), the recommended maximum annual average concentration is $10\mu\text{g}/\text{m}^3$. Brod's mean was $14.0\mu\text{g}/\text{m}^3$ in 2021;⁴⁶ Prijedor's last available result, from 2018, was $15.4\mu\text{g}/\text{m}^3$;⁴⁷ in Banja Luka, meanwhile, the 2020 average was $19.9\mu\text{g}/\text{m}^3$.⁴⁸

39 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

40 Majić et al., "Behavioural and Metabolic NCD Risk Factors," 2023

41 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

42 Kalinić et al., "Trends in Antihypertensive Medicine Utilization," 2022

43 European Environment Agency, "Air quality statistics dashboard," website accessed 25 April 2023. Available at: <https://www.eea.europa.eu/data-and-maps/dashboards/air-quality-statistics>

44 European Environment Agency, "Air quality statistics dashboard," website accessed 25 April 2023. Available at: <https://www.eea.europa.eu/data-and-maps/dashboards/air-quality-statistics>

45 Knežević and Milunović, "Air Quality in Banja Luka," 2022

46 European Environment Agency, "Air quality statistics dashboard," website accessed 25 April 2023. Available at: <https://www.eea.europa.eu/data-and-maps/dashboards/air-quality-statistics>

47 World Health Organization, Ambient (outdoor) air quality database, by country and city, Excel version, 2022

48 Knežević and Milunović, "Air Quality in Banja Luka," 2022

The problem of air pollution is similar in all of Bosnia and Herzegovina’s administrative units and each affects the other depending upon, literally, how the wind blows. To put these numbers into perspective, according to European Environment Agency estimates, Bosnia and Herzegovina as a whole had the highest number of years of life lost in Europe from PM_{2.5} – 2,379 per 100,000 – in 2022.⁴⁹



Photo: © UNDP/Daniel Grafton

49 European Environment Agency, “Health impacts of air pollution,” 2023

Challenges to better NCD care within the health system

Information from the cancer registry illustrates one of the struggles with NCDs facing the Republika Srpska's health system. Between 2005 and 2015, it reported that the age-standardised mortality rate of cancer among men stayed, with minor variations, around 120 per 100,000.⁵⁰ By 2014, this had reached 126.4,⁵¹ but in 2018 – the last year for which data are available – had jumped to 142.0.⁵² For women, the rate stayed close to 70 per 100,000 between 2005 and 2014,⁵³ but then rose to around 80 per 100,000 in the following years. It had moderated slightly by 2018, coming in at 76.3 per 100,000,⁵⁴ but this is still above the long term average from earlier in the decade.

Those considering NCD-reducing interventions therefore need to be aware of potential barriers arising from structural and funding difficulties in the provision of healthcare in the Republika Srpska. This report is too limited to give a detailed overview of the health system, but the following are ongoing issues relevant to NCDs.

A lack of universal coverage may impede case finding

The Law on Health Care of Republika Srpska guarantees care to its citizens on the principles of equality, availability, comprehensiveness, continuity, and coordination without discrimination.⁵⁵ This is delivered through a single public healthcare system. Access requires registration with a primary health care centre⁵⁶ called a *Dom zdravlja* (DZ). While these facilities are established by local municipalities, they are linked within the system to secondary and tertiary care institutions set up by the Ministry of Health and Social Welfare.

The Health Insurance Fund of the Republika Srpska is responsible for payment for services at every level. Its funding comes from a mandatory payroll tax for those who are employed, as well as direct premium payments from the self-employed and agricultural workers. The government covers the costs of certain categories who are either unable – through unemployment, for example – or exempted from paying the contributions.⁵⁷

Despite these institutional structures, the system has traditionally fallen short of its aspiration for universality: about a quarter of those registered with a DZ did not have insurance in 2020.⁵⁸ Anyone in this situation currently benefits from full coverage as long as an expansion of insurance to all residents in the wake of COVID stays in place. The permanence of that measure, though, remains unclear. No data are available on how many have not registered

50 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

51 Ibid.

52 Public Health Institute of Republic of Srpska, Population Health 2020, [2021]

53 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

54 Public Health Institute of Republic of Srpska, Population Health 2020, [2021]

55 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

56 European Observatory on Health Systems, Bosnia and Herzegovina, 2022

57 Data from interviews conducted by UNDP for Institutional Context Analysis

58 European Observatory on Health Systems, Bosnia and Herzegovina, 2022

with a DZ, let alone their insurance status. Of those registered and uninsured, a minority (6% of DZ patients in total) have not kept up to date with premium payments. Of the rest, who collectively constitute 20% of all DZ-registered patients, some may have emigrated without telling the Health Insurance Fund, while others may have informal work and so not be registered as either employed or unemployed. The data are not available to estimate how many fall into each group.⁵⁹

The lack of insurance cover, at the very least, implies low patient engagement with the health system. This, all things being equal, can greatly impede NCD case finding within the population – an issue consistent with the differences between the number of patients registered with diabetes or treated for CVD and the likely population prevalence. The authorities do try to address this issue when it comes to several NCDs. Services needed to diagnose certain conditions including, among others, cancer, diabetes and epilepsy, are free even for the uninsured, as are any treatments required in the immediate aftermath of diagnosis. Once diagnosed, patients must register with the Health Insurance Fund and people with these conditions are exempt from paying premiums.⁶⁰ Nevertheless, someone feeling ill, who is uninsured, may not be aware that they are likely to have one of these conditions, so may not attend until it has reached a later stage.

Medical interventions dominate care and NCD prevention receives limited attention

The healthcare provided in the Republika Srpska is not necessarily well suited to providing effective NCD management. Historically, healthcare there has focused mainly on communicable diseases. Although recently NCDs have received more attention,⁶¹ the system remains hospital-dominated.⁶²

Spending priorities indicate the low focus on prevention within healthcare: in the Republika Srpska in 2015 – the latest year for which data are publicly available – only 3.2% of public health spending in Republika Srpska went toward health promotion or disease prevention – less than PPP\$15 per person.⁶³ The consequence is that financing of primary preventive healthcare is difficult to obtain despite the relatively modest amount required.⁶⁴ Moreover, the spending of the little available in this field is not always well planned. In 2022, for example, more funding was allocated to healthcare facilities in the Republika Srpska for health screening and preventive healthcare, but the procedures to be implemented were left unspecified.⁶⁵

59 Luka Vončina et al., Can people afford to pay for health care? New evidence on financial protection in the Republika Srpska, Bosnia and Herzegovina, in press

60 Luka Vončina et al., Can people afford to pay for health care? New evidence on financial protection in the Republika Srpska, Bosnia and Herzegovina, in press

61 Data from interviews conducted by UNDP for Institutional Context Analysis

62 European Observatory on Health Systems, Bosnia and Herzegovina, 2022

63 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

64 Data from interviews conducted by UNDP for Institutional Context Analysis

65 Ibid.

The lack of investable resources poses a particular challenge for new efforts to deal with NCDs. As discussed below, the NCD Action plan explicitly states that its execution will require finding funding from international agencies.⁶⁶

Even those initiatives to improve prevention suffer from lack of follow through in execution. Despite the Law on Health Care mandating the establishment of centres for health promotion and disease prevention as integral parts of DZs, for example, clear guidelines on how these centres will be coordinated and financed have yet to appear.⁶⁷ Indeed, at the DZ level, preventive care is carried out opportunistically and often not prioritised, due to existing regulations and the administrative workload.⁶⁸

Similarly, although the Strategy for Improving Sexual and Reproductive Health in the Republika Srpska (2019-2029) set as a goal the implementation of organised breast and cervical cancer screening programmes by 2020,⁶⁹ in 2021 these were still not in place.⁷⁰ Instead, screening remains opportunistic and data on how many women receive screening are unavailable.⁷¹ All this even though breast cancer is the most common form of the disease among women in the Republika Srpska and cervical cancer the second most common, with the former also causing the most cancer deaths for women.⁷² Given that prevention-related programmes can be much less expensive than treatment costs, an approach focused largely on medical interventions – because prevention does not seem as pressing – represents false economy.

Low absolute level of resources within the system

In relative terms, the Republika Srpska's outlay on healthcare is lower than that in much of the European Union, but not dramatically so. Its public spending on health in 2021 came to 6.3% of GDP.⁷³ In the EU in that year, the aggregate figure was 8.1%, but the average of the individual member states was 7.3%.⁷⁴ Current health spending, which also includes out-of-pocket expenses, represented 9.5% of GDP in the Republika Srpska in 2021. The figure for the EU as a whole in 2020 – the last year for which data are available – was 10.9% if one treats the EU as a single body, but the member state average was 9.2%.⁷⁵ In other words, healthcare makes up a share of the local economy roughly consistent with that in the rest of Europe.

66 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

67 Data from interviews conducted by UNDP for Institutional Context Analysis

68 Ibid.

69 Republic of Srpska Ministry of Health and Social Welfare, Strategy for Improving Sexual and Reproductive Health (2019-2029), 2019

70 UNFPA, Inquiry on Sexual and Reproductive Health, 2021

71 Ibid.

72 Public Health Institute of Republic of Srpska, Population Health 2020, [2021]

73 Calculations based on data provided by Republika Srpska government sources

74 Eurostat Data Browser, General government expenditure by function (COFOG), Healthcare, web page accessed 25 April 2023. Available at: https://ec.europa.eu/eurostat/databrowser/view/gov_10a_exp/default/table?lang=en

75 Data from World Health Organization, Global Health Expenditure Database. Available at: <https://apps.who.int/nha/database/ViewData/Indicators/en>, (where 2021 data unavailable for a given country, that for most recent year used). Eurostat Data Browser. Available at: <https://ec.europa.eu/eurostat/databrowser/>, Eurostat, "Healthcare Expenditure Statistics," web page accessed 25 April 2023, [updated 2022]. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Healthcare_expenditure_statistics#Overview_of_healthcare_financing.2C_functions_and_providers

The economy, however, is very small compared to much of the rest of the continent in absolute and per capita terms, making the actual outlay smaller as well. In US\$ per capita, the Republika Srpska's total current healthcare expenditure in 2021 (\$609) lagged behind that of every EU country, as well as Serbia. Among its Western Balkans neighbours, only North Macedonia and Albania spent less per capita. In PPP terms, Republika Srpska's per capita spending (PPP\$709) falls behind even those.⁷⁶

In short, financial resources in the system are highly limited. In practice, this constraint often makes new investment, or even provision of adequate health care, difficult. To cite one example, according to the latest figures the Republika Srpska has 22.5 medical doctors per 10,000 people, which is among the lowest in Europe, ahead only of Albania.⁷⁷ More generally, the health system in the Republika Srpska is challenged by understaffing and a lack of resources.⁷⁸ Exacerbating matters is the issue of the best qualified clinicians often seeking to emigrate for better economic and professional prospects.⁷⁹

In summary, any new interventions to cut NCD risk, morbidity, or mortality in the Republika Srpska need to take account of the existing weaknesses in the formal health system and the restricted funds available for upfront investment.

Additional barriers to addressing NCDs

Poor understanding of NCD risks

Public awareness of NCDs and the need for behaviour change toward healthier lifestyles is very low in the Republika Srpska, with insufficient efforts at education.⁸⁰

Increasing political will

A report written for the Swiss Agency for Development and Cooperation (SDC) to review efforts to improve tobacco legislation in the Republika Srpska and the Federation of Bosnia and Herzegovina noted that habits of cooperation between stakeholders in the NCD prevention field were underdeveloped, making it hard to build greater political will.

76 Data from World Health Organization, Global Health Expenditure Database. Available at: <https://apps.who.int/nha/database/ViewData/Indicators/en>, Eurostat Data Browser. Available at: <https://ec.europa.eu/eurostat/databrowser/>, Eurostat, "Healthcare Expenditure Statistics," web page accessed 25 April 2023, [updated 2022]. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Healthcare_expenditure_statistics#Overview_of_healthcare_financing.2C_functions_and_providers

77 International Organisation for Migration, Emigration of Health Professionals, 2022; World Health Organization, Global Health Observatory Database, "Medical doctors (per 10 000 population)," accessed 25 April 2023. Available at: [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-\(per-10-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-(per-10-000-population))

78 Data from interviews conducted by UNDP for Institutional Context Analysis

79 International Organisation for Migration, Emigration of Health Professionals, 2022

80 Data from interviews conducted by UNDP for Institutional Context Analysis

Interviewees for this project did not address this matter, so this view may be a minority one.⁸¹ Nevertheless, it suggests that any stakeholder whose interests could be hurt by an NCD-related initiative may be able to use political allies to slow progress.



Photo: © UNDP

81 World Bank, “Implementation Completion and Results Report,” 2019; healthForum, “Health Risk Factors Project,” 2018; Swiss Agency for Development and Cooperation (SDC), “Reducing Health Risk Factors in Bosnia and Herzegovina,” [project description], 2021

Policies for addressing the overall burden of NCDs

Government policy of the Republika Srpska

Although many laws in the Republika Srpska have relevance to aspects of NCD control, the main policy document is the Action Plan for the Prevention and Control of NCDs in Republika Srpska 2019-2026. It draws on the then existing Policy for Improvement of Health of the Population in Republic Srpska and, very heavily, on the Action Plan for the Prevention and Control of NCDs in the WHO European Region 2016-2025.⁸² Indeed, much of the text of the Republika Srpska's plan explicitly quotes or summarises the contents of the European Region plan.

As does the Action Plan for the European Region, the Republika Srpska's has four priority action areas: Management; Disease prevention and health promotion; Health system strengthening; and Supervision, monitoring, evaluation and research. Although it contains priority interventions at the population and individual level, in practice these describe more general aspirations than specific actions, such as, among others: promotion of healthy consumption through fiscal and marketing policies; promotion of an active lifestyle and mobility; advocacy for clean air; and promotion of mental health. While responsibility for given areas are assigned to specific government departments, policy detail is generally lacking. Moreover, no locally-specific goals exist. Instead the plan restates the general ones in the Action Plan for the European Region.⁸³

The reasons for this general approach are likely twofold. One is a lack of relevant information. Among the more specific actions listed are to seek out best practice in various areas of the world or Europe, for example on reducing salt and fat consumption. The other is a lack of funding. The plan itself indicates that money had not been secured for it at the time of its publication and that many of the envisaged goals "require technical and financial support from the World Health Organization and other relevant agencies from the United Nations system and other international organizations."⁸⁴

Moreover, officials in the Republika Srpska would have limited tools to monitor the outcomes of many steps taken under the plan. Although an integrated health information system linking outpatient clinic and family medicine information with central health facilities has been built up since 2011,⁸⁵ in practice it is ineffective for NCDs due to insufficient metrics to monitor the impact of preventive interventions.⁸⁶ As discussed earlier, the Public Health Institute of the Republika Srpska does maintain a population-based cancer registry, but its diabetes

82 World Health Organization Europe, Action Plan for the Prevention and Control of NCDs in the WHO European Region 2016-2025, 2016.

83 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

84 Ibid.

85 Ibid.

86 Data from interviews conducted by UNDP for Institutional Context Analysis

registry does not cover all of those likely affected. The Ministry does have plans to increase the number of disease registries.⁸⁷ More broadly, however, much of the evidence to support policy interventions for NCDs and to monitor progress, including impact, is not consistently gathered.⁸⁸ The last Global Youth Tobacco Survey (GYTS), for example, was conducted in 2018;⁸⁹ the most recent Multiple Indicator Cluster Survey developed and supported by UNICEF was done in 2011;⁹⁰ and the last general survey of health in 2010.⁹¹

Other efforts – such as the plan from the first years of this century for the Public Health Institute to monitor family medicine facilities quarterly,⁹² a screening programme for NCDs introduced around the same time,⁹³ or the ‘Strengthening and Improvement of Modern and Sustainable Public Health Strategies, Capacities and Services for Public Health Promotion’ project to monitor and evaluate management of individual cardiovascular risks in family medicine⁹⁴ – have simply never gained traction.

Initiatives related to healthcare provision

The Republika Srpska has seen several initiatives and programmes to improve elements of NCD management and prevention within primary health care.

One is in the field of mental healthcare. Already in the post-conflict and transition period, across Bosnia and Herzegovina, including in the Republika Srpska health authorities began to build up extensive mental healthcare provision capacities, especially at the community level and in primary health care.⁹⁵ As of 2017, the Republika Srpska, had 37 Centres for Mental Healthcare to provide community-based care. These rely on multidisciplinary teams, including a psychiatrist, clinical psychologist, medical nurse, occupational therapist, and social worker. For more serious cases, there are two specialist hospitals and, in keeping with current best practice, a larger number (11) of general hospitals with integrated psychiatric wards. The Strategy for the Development of Mental Health in the Republika Srpska (2020-2030) seeks to build on these foundations further by, among other changes, developing or introducing better care coordination, mobile and fixed crisis teams, day clubs and protected housing, as well as a role for patients advocates.⁹⁶

87 Ibid.

88 Ibid.

89 Global Youth Tobacco Survey, Republic of Srpska 2018 Factsheet, 2018

90 UNICEF, Multiple Indicator Cluster Survey Report, 2013

91 The results of the survey itself are not available on line, but much of the relevant information is available Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026. . The survey data were published as . The survey data were published as Public Health Institute of Republic of Srpska, Извјештај о резултатима истраживања, 2011 (English, Republic of Srpska Population Health Survey, 2011).

92 Data from interviews conducted by UNDP for Institutional Context Analysis

93 Rodic et al., “Evaluation of a chronic disease prevention program,” 2008

94 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

95 Pajević et al., “Organization of mental healthcare,” 2020; Sinanovic et al., “The organisation of mental health services,” 2009; Republika Srpska Ministry of Health and Social Welfare, Стратегија Развоја Менталног Здравља 2020–2030, 2020

96 Republika Srpska Ministry of Health and Social Welfare, Стратегија Развоја Менталног Здравља 2020–2030, 2020

Another successful initiative has been the programme for cardiovascular risk assessment and management (CVRAM), an important outcome of the “Reducing Health Risk Factors in Bosnia and Herzegovina” project. It drew on a joint effort of public health and primary health care experts from across Bosnia and Herzegovina with content specifically developed for local needs. Family physicians use the Systematic Coronary Risk Evaluation (SCORE) to identify preventative or therapeutic interventions for those displaying the three main metabolic risks – hypertension, hyperlipidaemia, and type 2 diabetes – and the three leading behavioural risks – tobacco smoking, overweight or obesity, and insufficient physical activity. The package of potential interventions are all evidence-based and include several WHO-recommended “best-buys”. Doctors and nurses using the programme can also benefit from eight separate sets of clinical guidelines covering different situations.⁹⁷

As a result of the programme, by 2019 – when it formally wrapped up – an estimated 64% of the Republika Srpska's population had gained access to standardized, evidence-based, preventative CVD/CVRAM services in primary health care and family medicine.⁹⁸ How sustainable the impact of the programme will be over the longer term will become clear in due course.

Wider educational efforts have been less successful. Another element of the “Reducing Health Risk Factors in Bosnia and Herzegovina” programme – in this case implemented by the World Bank – aimed to help public health authorities manage major risks such as those related to NCDs, create local coalitions of stakeholders to prioritise NCD risks, and develop action plans to address them. After years of stakeholder disagreement and misunderstanding, as well as frequent personnel changes, the main activity of the project was focused on four cities in Bosnia and Herzegovina, including Doboj and Zvornik in the Republika Srpska.

The World Bank judged the outcome as moderately unsatisfactory, having no discernible impact on levels of NCD risk awareness. The Bank did correctly note that there had been progress in building links between various stakeholder groups that could help in future. A report written for the SDC, however, pointed out that the results of the deliberations of stakeholder coalitions under the process were largely aspirational and that cooperation between groups remained “fragile.”⁹⁹

97 World Health Organization Europe, Tackling noncommunicable diseases, 2018

98 Ibid.

99 World Bank, “Implementation Completion and Results Report,” 2019; healthForum, “Health Risk Factors Project; SDC, “Reducing Health Risk Factors in Bosnia and Herzegovina,” [project description], 2021.

Current policies and public health interventions for addressing specific NCD risk factors

In addition to the policies and actions in the preceding section which address NCDs in general, the Republika Srpska has policies and regulations which focus on specific NCD risks.

Tobacco control

Tobacco control in the Republika Srpska is weak, despite it being bound by the commitments of the WHO Framework Convention on Tobacco Control (FCTC) through Bosnia and Herzegovina's adherence to the treaty in 2009.

To begin with, comprehensive legislation in this field is lacking.¹⁰⁰ Instead, tobacco is regulated through a series of laws and decrees: the law on banning the sale and use of tobacco products to persons under the age of 18; the law on the prohibition of advertising of tobacco products; the law banning smoking of tobacco products in public places; the rulebook on packaging labelling of tobacco products; and the order on the prohibition of smoking and the sale of tobacco products in health institutions (which also covers social and child care institutions where health and social services are provided).

Tobacco taxation, meanwhile, is the responsibility of the Council of Ministers of Bosnia and Herzegovina and therefore the same across all of Bosnia and Herzegovina. It meets European Union and WHO recommendations, with an aggregate tax levy on the most commonly sold brand of cigarettes that comes to 84%. Half of this, 42% of the total, is an ad valorem excise tax, 27.5% specific excise tax, and 14.5% VAT.¹⁰¹

Another relevant piece of state level legislation covering all of Bosnia and Herzegovina is the law on the Public Broadcasting System. This act bans advertisements by tobacco companies and programs which in some way encourage the use of tobacco products by anyone, especially children.¹⁰² In this case, the laws enacted by the Council of Ministers and by the Republika Srpska related to marketing broadly align.

The legislative framework for tobacco control within the Republika Srpska has important gaps. Existing laws have not been revised for over a decade and a recently drafted proposed one has not been sent to the parliament. The age of the legislation matters: the law banning smoking in public places, for example, defines the practice as involving smoke from a flammable substance, thus not covering vaping.^{103, 104}

100 Data from interviews conducted by UNDP for Institutional Context Analysis

101 World Health Organization, Country Profile Bosnia and Herzegovina World Tobacco Report, 2021

102 Office of the High Representative, "Law on the Public Broadcasting System of Bosnia And Herzegovina," 2005

103 National Assembly of the Republika Srpska, "Law on the Ban on Smoking of Tobacco in Public Areas" 2004 [Unofficial translation]

104 Data from interviews conducted by UNDP for Institutional Context Analysis

Similarly, although the advertising law's general provisions may cover Internet-based ads, the legislation does not do so specifically.¹⁰⁵

Current rules also fall short of WHO recommendations in some respects. Except for healthcare institutions, for example, the public places where smoking is banned all have the option of establishing smoking areas.^{106,107} Similarly, although the labelling regulations require 35% of a cigarette package to include the health warning "Smoking kills," they do not mandate graphic warnings nor plain packaging.¹⁰⁸ Finally, the advertising provisions of the law do not cover tobacco companies publicising their own activities.¹⁰⁹

Equally important, the tobacco control measures actually on the books are poorly enforced. More than three-quarters of smokers aged 13 to 15 have never been challenged when buying cigarettes in stores.¹¹⁰ Smoking in public places and illegal tobacco sales are frequently tolerated.¹¹¹ Similarly, although the law on advertising bans the use of celebrities as a means of promoting tobacco products, high-profile figures do appear in advertisements for tobacco companies.¹¹²

Smoking cessation efforts could also be improved. Beyond a few clinics, the Republika Srpska has no effective services in this area, let alone a comprehensive programme.^{113, 114}

Finally, even though the excise tax rates on tobacco are consistent with WHO recommendations, their impact is undermined by avoidance. A 2021 analysis estimated that nearly a third of all cigarettes consumed in Bosnia and Herzegovina as a whole are illicit, with such sales often taking place openly on the street or in markets. Despite the substantial extent of illicit trade, Bosnia and Herzegovina has not yet ratified the FCTC Protocol to Eliminate Illicit Trade.¹¹⁵

105 National Assembly of the Republika Srpska, "Law on the Ban on Advertising of Tobacco Products" 2004 [Unofficial translation]

106 Ibid.

107 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

108 Republika Srpska Ministry of Health and Social Welfare, Правилник О Означавану Паковања Дуванских Производа [Rulebook on Labelling of Tobacco Product Packaging], 2011

109 National Assembly of the Republika Srpska, "Law on the Ban on Advertising of Tobacco Products" 2004 [Unofficial translation]

110 Global Youth Tobacco Survey, Republic of Srpska 2018 Factsheet, 2018

111 Jusufovic, "Hot Topics of Tobacco Control in Bosnia and Herzegovina," 2018

112 Data from interviews conducted by UNDP for Institutional Context Analysis

113 World Health Organization Europe, Tobacco Control Fact Sheet: Bosnia and Herzegovina, 2016

114 Jusufovic, "Hot Topics of Tobacco Control in Bosnia and Herzegovina," 2018

115 Gligorić et al., "Tobacco tax evasion in Bosnia and Herzegovina," University of Banja Luka working paper, 2021

Reduction of harmful alcohol consumption

Alcohol regulation is another field which, in Republika Srpska, is covered by a variety of rules rather than a comprehensive strategy.

In part, this reflects the constitutional division of powers. While the Republika Srpska has its own tobacco advertising law, this is not the case for alcohol. Instead, the law on the Public Broadcasting System of Bosnia and Herzegovina's state-level authorities is the most relevant legislation. It requires that television advertising for alcoholic beverages may not be directly targeted to minors or give the impression that consumption: improves physical activity; contributes to social and sexual success; solves personal problems; or has medicinal properties. The Code on Commercial Communications has similar restrictions on advertising in other media.¹¹⁶

Excise taxes are also a responsibility of the Council of Ministers of Bosnia and Herzegovina. These duties are between 8 BAM and 15 BAM per litre for liquor, 0.20 BAM per litre of beer, and 0.25 BAM per litre of wine. These are largely income-raising levies rather than aimed at reducing consumption.

Specific rules in the Republika Srpska related to alcohol cover its immediate sale. For alcohol consumed at the point of sale, the Law on Public Order and Peace imposes fines where beverages are given to an obviously drunk person, minor, person with mental illness, or person with intellectual disability. Meanwhile, the Decree on the Prohibition of the Sale and Use of Alcoholic Beverages in Public Places to Persons Under 18 and the Decree on the Prohibition of the Sale, Use and Serving of Alcoholic Beverages to Persons Under 18 in Catering Establishments restrict the access of people below that age to alcohol, at least in public. Overall, these measures could best be characterised as limited and are ineffectively enforced.

¹¹⁶ Bosnia And Herzegovina Ministry Of Human Rights And Refugees, "Eleventh Report [on] the Implementation Of The European Social Charter," 2020

Sodium, fat, and sugar reduction in diets

While some efforts have been made to improve diets in the Republika Srpska, more substantial ones are needed.

Existing salt-specific policies in place at the level of Bosnia and Herzegovina deal entirely with rules on food labelling and on the production and sale of salt as food. They do not cover efforts to reduce its use.¹¹⁷ According to WHO, sodium consumption is not effectively monitored, with no recent adult risk survey covering salt intake in either the Republika Srpska or in Bosnia and Herzegovina as a whole.¹¹⁸

There is no indication that the Republika Srpska has any specific policy to reduce sodium consumption; limit saturated fatty acid intake; eliminate industrially produced trans fatty acids; or reduce the impact of marketing to children of foods and beverages high in saturated fats, trans fatty acids, or free sugars.^{119, 120} Instead, the NCD Action Plan calls for the Public Health Institute to lead multi-ministry teams to study international best practice in these fields, a task which the plan does not foresee being complete until around 2025.¹²¹ Meanwhile, the Council of Ministers of Bosnia and Herzegovina has not imposed a tax on sugar-sweetened beverages.¹²²

Outside of regulation, however, officials have made efforts to improve the diets of young people. The Republika Srpska's Public Health Institute, Ministry of Health and Social Welfare, and Ministry of Education and Culture, together with UNICEF¹²³ developed the Nutrition Standards Programme. This works to create, at pre-schools and schools, an enabling environment for health, physical activity, and nutrition; strengthen institutional capacity to identify health and nutrition issues; improve cooperation among professionals, parents, health institutions, and local community associations; and encourage healthy lifestyles for children and those working in these institutions.¹²⁴ New publications and health education material are also expected to be produced from this programme.¹²⁵

117 For copies of relevant BiH legislation: https://extranet.who.int/ncdccs/Data/BIH_B25_s21_bs-pravilnik_o_oznacavanju_hranjivih_vrijednosti_hrane_78-12.pdf; https://extranet.who.int/ncdccs/Data/BIH_B25_s21_bs-Pravilnik_o_pru%5fbeanju_informacija_poto%5fa1a%4%8dima_o_hrani_68-13.pdf; https://extranet.who.int/ncdccs/Data/BIH_B25_s21_hr-pravilnik_o_soli_za_ljudsku_ishranu_39-09.pdf

118 World Health Organization, "Has conducted a recent, national adult risk factor survey covering salt/sodium intake," Global Health Observatory Database. Available at: <https://www.who.int/data/gho/data/indicators/indicator-details/GHO/has-conducted-a-recent-national-adult-risk-factor-survey-covering-salt-sodium-intake>

119 World Health Organization, NCD Progress Monitor, 2022

120 Global Nutrition Report, "Country Profile: Bosnia and Herzegovina," 2022

121 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

122 Global Nutrition Report, "Country Profile: Bosnia and Herzegovina," 2022

123 Data from interviews conducted by UNDP for Institutional Context Analysis

124 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

125 Data from interviews conducted by UNDP for Institutional Context Analysis

Meanwhile, the Public Health Institute also collaborates, through joint working groups, with all relevant ministries, NGOs, cultural and religious communities, and associations of local communities to work on the reformulation of products (such as bread), advocate for better preparation of foods, and shape legislation on the public procurement of food for children.¹²⁶

Promotion of physical activity

Although the NCD Action Plan for the Republika Srpska calls for various programmes to encourage greater physical activity among specific groups – such as pre-school and school-aged children, those with NCDs, and the elderly¹²⁷ – our research was not able to find evidence of the introduction of any such schemes.

Air quality improvement

One of the many goals of the NCD Action Plan is to develop and implement appropriate inter-sectoral policies and regulations that could help reduce air pollution. To date, however, our research could find no evidence that any such policies have appeared. The Action Plan itself gives a deadline of 2025.¹²⁸

The costs and return on investment of five packages to address the NCD burden in the Republika Srpska

The same team which analysed the current economic cost of NCDs in the Republika Srpska, presented above, also studied the potential expense and gains from five packages to address this burden. These are sets of interventions identified by WHO globally as its “best buys” – those which have proven themselves cost-effective in a wide range of settings. Of the packages, one is a collection of clinical measures to improve diagnosis and treatment of both CVD and diabetes. The other four are population health interventions to, respectively: improve tobacco control; reduce hazardous alcohol use; encourage physical activity; and reduce sodium consumption. **Table 2** provides the detailed measures within each package.

126 Ibid.

127 Republika Srpska Ministry of Health and Social Welfare, NCD Action Plan 2019-2026

128 Ibid.

Table 2. NCD interventions costed within the OneHealth Tool

CVD and diabetes-related clinical measures
Screening for risk of CVD/diabetes
Follow-up care for those at low risk of CVD/diabetes (absolute risk: 10-20%)
Treatment for those with very high cholesterol but low absolute risk of CVD/diabetes (< 20%)
Treatment for those with high blood pressure but low absolute risk of CVD/diabetes (< 20%)
Treatment for those with absolute risk of CVD/diabetes 20-30%
Treatment for those with high absolute risk of CVD/diabetes (>30%)
Treatment of new cases of acute myocardial infarction (AMI) with aspirin
Treatment of cases with established ischaemic heart disease (IHD) and post MI
Treatment for those with established cerebrovascular disease and post stroke
Treatment of cases with rheumatic heart disease (with benzathine penicillin)
Standard glycaemic control
Intensive glycaemic control
Retinopathy screening and photocoagulation
Neuropathy screening and preventive foot care
Tobacco control
Monitor tobacco use/prevention policies
Protect people from tobacco smoke
Offer to help quit tobacco use: mCessation
Warn about danger: Warning labels
Warn about danger: Mass media campaign
Enforce bans on tobacco advertising
Enforce youth access restriction
Raise taxes on tobacco
Plain packaging of tobacco products
Offer to help quit tobacco use: Brief intervention
Hazardous alcohol use reduction
Enforce restrictions on availability of retailed alcohol
Enforce restrictions on alcohol advertising
Enforce drunk driving laws (sobriety checkpoints)
Raise taxes on alcoholic beverages
Screening and brief intervention for hazardous and harmful alcohol use

Encouragement of physical activity

Awareness campaigns to encourage increased physical activity

Brief advice as part of routine care

Sodium reduction

Sodium surveillance

Harness food industry for product reformulation

Adopt standards: Front of pack sodium labelling

Adopt standards: Strategies to combat misleading marketing

Knowledge of sodium risk: Education and communication

Environment: Salt reduction strategies in community-based eating spaces

The costs of policies and clinical intervention

The costs of the four policy intervention packages were calculated with the WHO Costing Tool,¹²⁹ and those for the clinical package using the OneHealth Tool. For further details of how these tools were applied, see Appendix B. The costs of the intervention packages were estimated for the period 2023–2037. **Table 3** shows the figures for each of the first five years of this period and the five- and 15-year totals.

The combined clinical interventions would be the most expensive, with an annual cost of 35.55 million BAM in 2027. Implementation of this entire package would require 173.92 million BAM during the 5-year scale-up and 553.05 million BAM over 15 years. The total outlay required for the tobacco package would be 4.0 million BAM for 5 years and 13.7 million BAM over 15, although the costs of individual interventions within the package vary. Certain policies, such as mass-media campaigns and protecting people from smoking, have large expected costs. Nevertheless, numerous low-cost tobacco policies exist, including package warning labels and bans on tobacco advertising. Raising taxes, meanwhile, can be revenue generating. The alcohol control package would cost an estimated 4.6 million BAM for 5 years, the salt-reduction one 2.0 million BAM, and the physical activity awareness interventions 1.1 million BAM.

¹²⁹ World Health Organization, Costing tool – user guide: Scaling up action against noncommunicable diseases: How much will it cost?, 2012.

Table 3. Estimated costs of policy and clinical interventions in millions of BAM, 2023–2037

Intervention	2023	2024	2025	2026	2027	Total 2023- 2027	Total 2023- 2037
Tobacco control package	0.45	0.93	0.86	0.93	0.90	4.08	13.70
Alcohol control package	0.46	1.04	1.01	1.07	1.05	4.64	16.89
Physical activity awareness package	0.01	0.31	0.26	0.26	0.27	1.11	4.18
Salt-reduction package	0.07	0.47	0.46	0.47	0.48	1.96	7.49
Total for all policy interventions	0.99	2.75	2.59	2.73	2.70	11.79	42.26
CVD and diabetes clinical intervention package	34.11	34.39	34.74	35.13	35.55	173.92	553.05
Total	35.11	37.15	37.32	37.87	38.25	185.71	595.31

Health benefits

The analysis also considered health benefits, at the population level, likely to arise from the implementation of each of the packages. For the methodology and its limitations, see Appendix B.

All the interventions would significantly reduce the number of lives lost to causes related to CVDs (**Table 4**). Salt-reduction interventions would have the greatest impact on mortality, followed by CVD and diabetes clinical interventions and tobacco-related ones.

Table 4. Estimated health benefits over 15 years

Intervention package	Strokes averted	Acute ischaemic heart disease averted	Mortality averted	Healthy life-years gained
CVD and diabetes clinical intervention package	1 505	1 318	2 251	13 155
Tobacco control package	1 275	1 263	1 048	9 283
Alcohol control package	35	0	370	36 428
Physical activity awareness package	40	118	125	2 614
Salt-reduction package	8 935	6 397	5 217	44 120

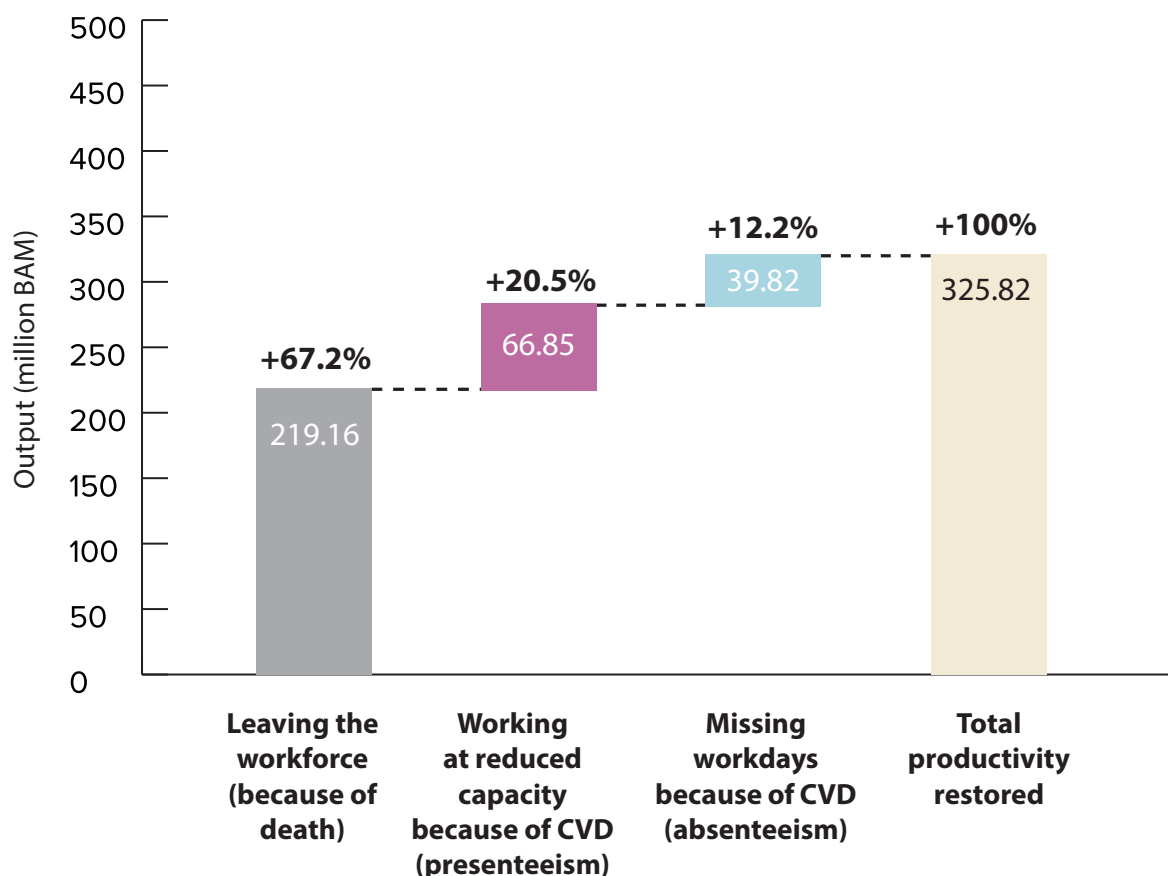
Each set of interventions would also add healthy life-years. The salt, tobacco, and clinical intervention packages prevent strokes and cardiovascular events, and thus individuals would avoid disabling states (such as partial paralysis from stroke) that can increase pain and suffering, reduce mobility, and impair speech and thought. Again, the salt-reduction brings the largest gains by this measure, followed by alcohol related interventions, the CVD and diabetes clinical ones, and those involving tobacco control. That said, the tobacco figures may be an underestimate (see Appendix B).

Economic benefits and return on investment

As discussed earlier in this report, the NCDs included in this analysis reduce the labour workforce and productivity through premature mortality, fewer days of work (absenteeism) and reduced productivity while at work (presenteeism). Accordingly, using the same methodology as that for determining the economic burden of NCDs above, it is possible to calculate the labour productivity gains from the prevention of deaths and disease incidence resulting from implementation of these packages compared to the situation if they were not enacted.

Figure 5 shows the those gains over 15 years.

Figure 5. Recovered economic output expected from interventions to prevent tobacco and alcohol use, inadequate physical activity, excess salt and primary prevention of CVDs over 15 years



The greatest positive impact on productivity is from reduced mortality of all kinds (67.2% of total productivity gains), followed by reduced presenteeism from CVD (20.5%) and lower absenteeism from CVD (12.2%).

These economic benefit figures, combined with the previously described costs of the packages, allow a cost-benefit analysis. Return on investment and cost-benefit ratios are measures of the efficiency of a health-care investment, as the magnitude and timing of the gains and required outlay are compared directly. Simply put, the cost-benefit ratio is the discounted (present) value of the benefits of an intervention divided by the discounted (present) value of the investment costs. Such discounting is needed for future costs and benefits because a unit of currency in the future is typically worth less than a unit today due to inflation or, more formally, the time value of money. A ratio of greater than one indicates that an intervention generates more benefits – in this case calculated as the gains to the whole economy from improved productivity – than the investment costs – in this case, for the most part, government outlay. For more details on the cost-benefit analysis methodology, see Appendix B.

Comparison of the costs and benefits of each package shows that all of the population-level risk reduction ones – salt reduction, tobacco control, encouragement of physical activity, and alcohol control – have benefits that exceed the costs of implementation over 15 years, and all but the encouragement of physical activity and tobacco control do over five years.

Table 5. Costs, benefits and cost–benefit ratios at 5 and 15 years, by intervention package (millions of BAM)

Intervention package	5 years			15 years		
	Total cost	Total productivity benefits	Return on investment	Total cost	Total productivity benefits	Return on investment
Tobacco	4.08	2.71	0.71	13.70	36.87	4.30
Alcohol	4.64	4.73	1.28	16.89	38.01	4.03
Physical activity	1.11	0.60	0.61	4.18	5.10	2.20
Salt	1.96	13.94	7.62	7.49	180.94	38.98
CVD and diabetes clinical interventions	173.92	8.32	0.04	553.05	64.90	0.08

The salt-reduction package has the highest impact, with 1 BAM of investment expected to yield 13.94 BAM during the first 5 years and 38.98 BAM over 15 years. Tobacco interventions also have a high return on investment over 15 years, with a cost-benefit ratio of 4.3 during that period.

The package of clinical interventions has a cost-benefit ratio of less than one over five and 15 years. This is a frequent result in health economics because of the high costs of medical treatment. Lack of return on investment in these calculations does not, however, mean the absence of utility. First of all, although much higher cost, this package does yield far more productivity benefits than those of any other except salt reduction. Moreover, other benefit metrics than economic output, such as quality of life, may indicate cost-effectiveness. Finally, these clinical interventions are an essential part of making the right to health in the Republika Srpska meaningful for affected individuals.

Overall, then, policy makers in the Republika Srpska have a variety of intervention packages available that should diminish the NCD burden and yield economic productivity gains greatly in excess of the investment outlay, notably – but not exclusively – sodium and tobacco control measures.

Limitations of economic analysis

As noted throughout this report, the investment case methodology has several limitations. It does not include all NCDs and their risk factors. Nor does it capture all productivity losses associated with NCD morbidity and mortality such as unpaid. Instead, it focuses on the four major NCD categories and workplace productivity losses as these are simpler to estimate.

Moreover, beyond healthcare treatment costs, the investment case model does not estimate other direct costs associated with NCDs such as non-medical costs (e.g., transport to a health provider, foregone wages of carers), retirement benefits, nor does it attempt to include intangible costs such as care provided by relatives and quality of life.

Readers should not interpret this cost-benefit analysis as a budget costing exercise. The estimated costs of the interventions do not take into consideration the current actual expenditure on, nor the potential benefits already arising from, these interventions where they are partially implemented. Moreover, interventions for which evidence of benefits was lacking were excluded from the analysis. On the benefits side, the model does not estimate reductions in direct healthcare costs to treat prevented NCDs.

Combined, these limitations imply that the model is conservative in its estimates and that both the burden of NCDs as well as the benefits of investing in NCD prevention and control are higher than estimated.

Conclusions

This study shows that the current high NCD burden in the Republika Srpska, with its attendant direct and indirect economic costs, will continue to grow without active steps within the health system and by policy makers.

In practice, the major barriers to progress seem to be those related to the low level of resources available for the healthcare system, a lack of focus on NCD prevention, and poor understanding of NCD risks within the population as a whole. On the other hand, recent progress in the creation of an NCD plan, and efforts to strengthen primary care – especially around mental health care provisioning – are indications of the political will to improve.

While all five of the intervention packages would be valuable within the Republika Srpska's current context, two stand out for particular attention because of their relatively low cost, high return, element of public education, and capacity to be implemented without the need to place an additional burden on the health system: sodium reduction measures and further enhancement of tobacco control.

Implementation of the salt reduction package

The salt reduction package is the second most economically feasible of those studied – after encouraging physical activity – and is expected to lead to the greatest reduction in NCD morbidity and mortality. It should be the highest priority for implementation. The package’s multi-faceted elements include: introducing surveillance, harnessing industry for reformulation, adopting labelling and marketing standards, integrating health education and communicating tailored messages for each key environment. Government agencies already have some experience improving the health of food offerings in educational institutions and these do not appear to have raised any significant stakeholder opposition.

Further tobacco control interventions

Tobacco control has the second highest forecast return on investment over fifteen years. Not all of the measures need be costly, however. A useful beginning for the Republika Srpska would be presenting the new draft law on tobacco control for parliamentary consideration. More generally, it would be valuable to insure the rigorous implementation of any existing and new measures, including the range of options from the package considered within this Investment Case. These, in turn, are based on elements of the WHO’s MPOWER package: eliminating exposure to second-hand smoke, implementing large health warnings on tobacco packages, mass media campaigns, and tobacco advertising bans.

Other possible actions

Although the alcohol package is more expensive than the other policy ones, it does have the advantage of beginning to pay off quickly, with a cost-benefit ratio above one already after five years.

The research for this study also indicates that the Republika Srpska has yet to implement some of the promising ideas detailed in its National NCD Action Plan. Considering problems with air quality and high levels of overweight/obesity, the government should ensure that focus does not drift away from the parts of those plans which aim to improve air and encourage physical activity.

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Appendix A: Institutional Context Analysis Methodology

The ICA was based on a desk review of materials, interviews with policy-makers across sectors and institutions, and discussions with stakeholders. Members of relevant bodies discussed how NCDs can be prioritised in government policies, the priorities of various sectors and stakeholders and how these could support a strengthened whole-of-government NCD response in Republika Srpska. The valuable insights gained from these discussions are incorporated throughout this report and informed its findings and conclusions.

Appendix B: Economic Analysis Methodology

This section outlines the methods and economic models used in order to calculate the economic burden of NCDs in terms of direct costs and indirect costs (absenteeism, presenteeism and premature death); the cost of interventions (clinical and policy interventions); the economic value of the health impact from those interventions; and their consequent return on investment.

Calculating the economic burden of noncommunicable disease

A model was developed to calculate the economic burden of NCDs, which provides estimates of the current direct and indirect costs of NCDs in the Republika Srpska. Calculations were based on the data provided by national and Republika Srpska authorities through the WHO Country Office. The data used for the population by age and sex for the period 2021–2036 were modelled in the OneHealth Tool. The details included incidence rates by age and sex for heart attack and stroke and prevalence by age and sex for diabetes, hypertension and chronic respiratory diseases, provided by a local team. Mortality rates by age and sex were applied for each condition. The model provided projections for the numbers of incident and prevalent cases and mortality due to diabetes, CVDs, chronic respiratory diseases and cancer between 2021 and 2036, assuming that current rates would remain constant. These projections were summarised as total incidence, prevalence and mortality for both the entire population and the working-age population, defined as people aged 15–65 years.

The following steps were followed to calculate the economic costs.

- Total government health expenditure and the share of total health expenditure on NCDs were provided by the WHO Country Office. A lack of local data meant that direct non-health care costs (such as disability payments) were not included in the analysis.
- The annual value (in terms of economic output) of each full-time worker in the Republika Srpska was calculated from the gross domestic product (GDP) per employed person, defined as the GDP (12.6 billion BAM in 2021, local data) divided by the total employed labour force. Local data on the total labour force aged ≥ 15 years (516 000, local data), the unemployment rate (12.9%, local data) and the labour force participation rate (52.2%, local data) were used to determine the total employed labour force in the Republika Srpska.

- Data were incorporated on the extent to which NCDs reduce worker productivity. Rates were found in the academic literature, to describe (i) the reduction in labour force participation due to hypertension, stroke, acute myocardial infarction and diabetes; (ii) the reduction in full-time hours worked because of absenteeism; and (iii) the reduction in productivity due to presenteeism.
- The number of people with NCDs who were working in the Republika Srpska, in 2021 was determined from labour force participation, unemployment and mortality rates. The model began with people of working age with NCDs and then subtracted those who chose not to participate in the labour force or were unemployed, then subtracted those who could not participate in the labour force specifically because of their NCD and, finally, subtracted those who had died. The result was the estimated number of active workers with NCDs.
- The final steps were to calculate economic losses from premature deaths from the numbers of workers who had died and would-be workers who could not participate in the labour force, as well as the costs of absenteeism and presenteeism for surviving active workers with NCDs. The model applied the relevant productivity figures found in the second step to the populations determined in the third step and multiplied this by the GDP per employed person. This calculation resulted in the total indirect costs of each NCD.

Calculating the costs of policy and clinical intervention packages

The costs of policy intervention were calculated with the WHO Costing Tool. Those of the clinical intervention package were determined using The OneHealth Tool. Each package used, the WHO Costing Tool or the OneHealth Tool, costed human resources, training, external meetings, mass-media campaigns (such as television and radio time and newspaper advertisements) and miscellaneous equipment necessary to enact the relevant policies and programmes. This necessitated assumptions, made by WHO experts, about the quantity of input required to implement and enforce the given policies. For the clinical package, the OneHealth Tool was also used to identify, quantify and value each resource required for all of the interventions and their costs. The WHO Costing Tool or the OneHealth Tool, as appropriate, was then used to estimate the quantity of resources required at relevant jurisdictional for each package. The unit costs for resource items were taken from the WHO-CHOICE database.

Calculating benefits and return on investment

Analysis of the returns on investment are based on an Excel® model developed in 2015 by WHO and the UNDP, which was based in turn on the OneHealth Tool and the WHO Costing Tool.

In order to determine the overall impact of the set of interventions on GDP, the productivity measures were assessed using the following steps.

- The amount by which NCDs reduce worker productivity was incorporated, as noted for the model on the economic burden of NCDs. As the interventions reduce the projected incidence of ischaemic heart disease and stroke, there is an associated increase in the number of healthy life-years of the population. Inclusion of the increase in healthy life-years, the GDP per employed person and reductions in the rates of absenteeism and presenteeism allows determination of the increase in GDP attributable to the value of avoided absenteeism and presenteeism.
- The increase in labour force participation due to avoided deaths was calculated from the labour force participation rate in the Republika Srpska, and the projected number of deaths avoided. Avoided mortality was monetized by multiplying by the GDP per worker, as outlined above.
- The return on investment was calculated for the interventions listed in Table 2 of the main text of this report. These were selected from the available data to ensure sufficient data for calculating the costs and health effects.
- The projected economic gains from implementing interventions that are considered cost-effective were therefore the value of avoided presenteeism, the value of avoided absenteeism, and the value of avoided mortality. The impact of an intervention, measured as the total increase in GDP, was calculated by combining the three types of gain.
- The return on investment for the Republika Srpska, was arrived at by comparing the impact (increase in GDP) of the interventions with the total cost of setting up and implementing the interventions. It was calculated with the net present value approach to future costs and economic gains, with 3% discounting.

