This chapter presents results from modelling the implementation of ten policy actions including food labelling; menu labelling; mass media campaigns promoting physical activity; prescribing physical activity in primary care; mobile apps promoting healthy lifestyles; workplace wellness programmes; workplace sedentary behaviour programmes; school-based programmes; expanded public transport and statutory bans on advertising targeting children. In addition, the impact of three policy packages is shown, including a package of mostly existing, communication-based policies; a package of physical activity-based policies; as well as a mixed package of policies that are still relatively rarely implemented in OECD countries, but nevertheless show significant promise. Results are presented for 36 countries, including OECD countries in the European Region as well as Japan, Mexico, Canada, and Australia, together with other non-OECD EU28 member states and South Africa. A particularly innovative aspect of this analysis is its focus not only on health outcomes, but also on economic outcomes, including the policy impact on health spending, on the employment and productivity of workers, as well as on the gross domestic product (GDP) of countries.
Key findings

- Population-wide interventions such as food labelling, menu labelling and mass media campaigns will produce the largest health gains, resulting in between 51 000 and 115 000 life years (LYs) gained annually in the 36 countries included in the analysis. Menu labelling performs the best overall.
- Menu labelling will help avoid the largest number of cancers annually in all the modelled countries (1 900); cardiovascular diseases (CVDs) (24 000); diabetes (11 000). Mobile apps will generally have the weakest effect on disease incidence.
- The effect of interventions on disability-adjusted life years (DALYs) is larger than on life years (LYs). This is especially true for interventions targeting children, as the modelling period is not long enough to capture the effect on the young cohort.
- Most interventions will make a significant impact on health expenditure, cumulatively saving between USD PPP 13 billion (menu labelling intervention) and 0.5 billion (school-based programmes) between 2020 and 2050.
- Most interventions are predicted to make a significant impact on labour market outputs and productivity. For example, 21 000 more people will be in employment as a result of menu labelling intervention, while mass media campaigns will help add 28 000 people. On a per capita basis, the effect of mass media campaigns will be felt the most in Estonia, with up to 10 people per 100 000 gaining employment annually, who would otherwise be unemployed, followed by Bulgaria (9.8 per 100 000) and Hungary (9.1 per 100 000).
- The labour market gains produced by the interventions are usually several times larger than the corresponding reductions in medical expenditure. When health expenditure savings and labour market gains are combined, they will be larger than the costs of running the interventions in most cases.
- Investing in prevention packages to tackle overweight is a very good investment for countries. For every USD PPP invested in four out of nine interventions, countries will see a return of at least USD PPP 4-5 in the form of economic benefit each year.
- There are regional differences in policy effect, but they are outcome-dependent. For example, the policy which performed the best overall, menu labelling, will make a larger impact on the population-standardised health burden in Central and Eastern European countries due mainly to higher prevalence of overweight there. On the other hand, its effect on population-standardised health expenditure will be stronger in Japan and in Western European countries (even after adjusting for PPP), due primarily to the higher medical costs in these countries.
- Combining interventions in prevention packages will return higher benefits. Investing in a communication package to upscale policies already in place in many OECD countries will result in a gain of 205 000 LYs per year across all the 36 countries included in the analysis and will save about USD PPP 26 billion cumulatively by 2050.
- The communications package is also expected to prevent almost 3 360 cases of cancer annually in all countries analysed (about 500 of which will be in Japan); 40 000 of CVD (6 300 of which in Mexico); 5 100 of dementia; 27 000 of diabetes and 11 000 cases of mental illnesses.
- A “mixed package” containing policies which are still rarely implemented, but which show promise will produce similar results (i.e. almost 160 000 LYs will be gained annually and USD PPP 23 billion will be saved cumulatively by 2050).
- A package to promote physical activity will produce smaller, but still significant effects, by producing a gain of 70 000 LYs annually and by saving USD PPP 17 billion cumulatively by 2050.
6.1. Introduction

Overweight\(^1\) and its related conditions are the cause of large health and economic costs. Findings presented in Chapter 3 show how overweight is responsible for a reduction in life expectancy of 2.7 years across OECD countries and how treating overweight-related diseases costs, on average, 8.4% of the health budgets of these countries. The burden of disease caused by overweight also has an impact on the broader economy: a reduction in workforce size and in productivity affects GDP and leads to an increase in fiscal pressure.

Many effective policy options exist to scale up national policy action to deal with the rising obesity burden. As shown in Chapter 5, OECD, EU28, G20 and OECD accession and selected partner countries have been very active in the last decade and have implemented a rich set of policy actions to tackle overweight by promoting healthier diets and an active lifestyle. However, policy gaps still remain either because, as available evidence suggests, some of the policies currently in place would be more effective if they were redesigned, for instance, food labelling schemes or advertising regulations, or because countries can now choose to implement additional policy actions such as menu labelling schemes. This chapter reports the findings of an analysis (Box 6.1) developed to help countries close these policy gaps. The analysis presented in this chapter assesses and compares the health and economic impact of a number of public health actions aligned with various relevant global action plans such as the World Health Organization’s (WHO) Global Strategy on Diet, Physical Activity and Health and the Global Action Plan on Physical Activity 2018–2030.

The main objective of the analysis is to evaluate if the implementation of a selected number of policy actions, scaled up to national levels, can reduce the health and economic burden of overweight, the extent of that reduction and whether those actions would represent a good investment for governments. The choice of the options to be modelled is based on a number of criteria, including the availability of high-quality quantitative evidence to feed the OECD SPHeP-NCDs model (for more information see Chapter 3, Box 3.2). The effects of each action are presented, along with the possible impact of combining different policies. Results are presented for 36 countries including OECD countries in the European Region as well as Japan, Mexico, Canada, and Australia, together with other non-OECD countries that are EU28 member states and South Africa\(^2\). All the policies are modelled on the assumption that they are implemented in 2019, and their effectiveness is assessed over the period 2020-2050.

**Box 6.1. Calculating the return on investment from policies to tackle overweight using the OECD SPHeP-NCDs model**

Whether a particular policy will work in a given context depends on a number of factors, some of which can be location-specific. For example, the return of investment of a policy may depend not only on its general efficacy, but also on the local medical costs of treating related diseases and complications; demographic structure; epidemiological burden and the cost of intervention implementation. Within the OECD Strategic Public Health Planning for NCDs (SPHeP-NCDs) model, policies are modelled with respect to the following four key parameters:
Effectiveness of interventions at the individual level. This parameter captures how individual behaviour changes, following exposure to the interventions. As far as possible, this evidence is borrowed from peer-reviewed meta-analyses, preferably from randomised control trials.

Time to the maximum effectiveness achieved and effectiveness over time. The effects of an intervention can be time-limited and/or time-dependant, with the relationship generally at first becoming stronger, and then fading out. This parameter describes changes in the effectiveness of interventions over time.

Intervention coverage, including description of eligible populations, as well as their exposure. For example, some interventions may only affect a subset of a population (e.g., individuals in certain age groups or with particular risk factors). In addition, in some cases, only a proportion of the eligible population may be exposed, such as only those who visit primary care providers and are willing to participate.

Implementation cost. The implementation of a public health action may entail a number of costs including, for example, costs related to its planning, administration, monitoring and evaluation and so on. In addition, interventions may involve providing some form of equipment or material to be delivered to the target population (e.g. brochures, or stand-up desks). The intervention costs are estimated based on the WHO-Choice methodology (WHO, 2003[1]) taking into account differentials in relative prices (as measured by differences in PPPs and exchange rates). All the costs are expressed in 2015 USD PPPs.

To gauge the population-level effectiveness and the return of investment of public health policies designed to promote healthy diets and an active lifestyle, actions are evaluated against a “business-as-usual” scenario in which no new policy is put in place and the provision of preventive and health services is implemented at the current levels, specific to a country. The comparison between the business-as-usual and the policy scenario corresponds to the impact of a policy, and it is carried out by considering all the relevant dimensions including, for instance, differences in health, health costs, labour market productivity and so on, which provides all the needed information to carry out a return on investment analysis.

For more information on the OECD SPHeP-NCDs model, please see the SPHeP-NCDs Technical Documentation, available at: http://oecdpublichealthexplorer.org/ncd-doc.

6.2. Policies to tackle overweight and to promote healthy lifestyles: innovative policy options to upscale efforts

The analysis presented in this chapter considers ten actions that are categorised into three of the four policy domains, following the OECD framework described in Sassi and Hurst (2008[2]):

- Policies influencing lifestyles through information and education, specifically food labelling, menu labelling, mass media campaigns promoting physical activity, prescribing physical activity in primary care settings, and mobile apps promoting healthy lifestyles.
- Policies widening the number of healthy choice options, specifically workplace wellness and workplace sedentary programmes, school-based programmes as well as expanded public transport.
- Policies to regulate or restrict actions promoting unhealthy choice options. In this group, one policy was modelled: statutory bans on advertising targeting children.
6.2.1. Policies influencing lifestyles through information and education

Food labelling

The modelled intervention consists of statutory policy changes, requiring all manufacturers or retailers to provide information on the nutritional composition of foods sold in stores and supermarkets. Such information should be clearly visible, as well as easy to understand and intuitive. Currently, almost all the OECD countries require some sort of labelling on processed foods, which may be attached to the front of the package (i.e. front-of-pack labelling - FoP), but is more often only attached to the back (i.e. back-of-pack labelling - BoP) of the packaged foods. While BoP labels tend only to inform about the nutrient content of foods, and sometimes may be difficult to read and understand, FoP labels are usually more visually appealing and intuitive. Available evidence concludes that FoP labels, such as the Nutri-Score labels in France, or warning labels in Chile, are more effective than BoP labels (Cecchini and Warin, 2016[3]; Campos, Doxey and Hammond, 2011[4]). Nevertheless, currently only four OECD countries implement mandatory FoP labels with virtually all the other OECD countries having mandatory guidelines only for BoP (for more information, see Chapter 5’s overview of obesity policy approaches).

In the simulation, intuitive FoP labels are assumed to decrease average daily calorie intake by 1.16%. This effectiveness parameter is primarily based on an update to a recent meta-analysis (Cecchini and Warin, 2016[3]) concluding that the implementation of food labelling for pre-packaged processed foods from industrial production can reduce average calorie intake by 2.21%. The analysis presented in this chapter, assumes that this effect represents a lower bound of the effects of FoP labels, as they are generally found to be the most effective label type (Cecchini and Warin, 2016[3]; Campos, Doxey and Hammond, 2011[4]). Furthermore, account is taken of the fact that only a fraction of all calories come from the consumption of processed foods sold in stores and supermarkets. More specifically, evidence from the United States (Lin, Guthrie and Frazão, 1999[5]) and Canada (Nardocci et al., 2019[6]) suggests that only 80% of the total calorie intake comes from food that would be covered by this intervention (e.g. food sold in supermarkets or grocery stores). Furthermore, the policy is assumed to affect only the consumption of processed foods, and therefore will not change the consumption of foods such as as fruit, vegetables, legumes and meat. Based on Monteiro et al (2018[7]), processed and highly processed foods account for about 65-66% of all calories consumed. The resulting change in calorie intake is converted into changes in body-mass index (BMI), by using the methodology developed by Hall and colleagues (2011[8]) and assuming an achievement of the maximum reduction after 100 days followed by a constant BMI thereafter (Strychar, 2006[9]).

The intervention is assumed to target the whole population aged at least one year old as children are likely to be affected through the food bought by their parents. However, following previous evidence (Grunert et al., 2010[10]), only 15% of the target population is assumed to be affected by the intervention as not everyone is likely to read and consider the information on the nutrition label.

The cost of setting up a new food labelling programme includes expenses on policy administration, planning and enforcement in the form of food inspections. This cost estimates vary between USD PPP 1.15 and USD PPP 1.30 annually per capita across the countries included in the analysis. Conversely, the analysis does not account for the additional costs associated with designing and printing nutrition labels or for the potential cost associated with the reformulation of certain foods, likely to be borne by the private sector. The general discussion of the potential costs for the industry is provided in Chapter 8 of this report. For example, graphic design and prepress for new labels can cost around USD 4 000 per item. In addition, there may be associated printing material costs (up to USD 6 100 per product) and labour costs (about USD 5 800 per product).

Menu labelling

This scenario models a statutory menu labelling policy implemented in restaurants and other food service establishments (e.g., fast food outlets). As mentioned in Chapter 5, this policy is currently implemented in
very few OECD countries, for example in the United States and Australia, so it could be the next major policy action after the full roll-out of a food labelling policy. The implementation of this action would also make it compulsory to provide contextual information on the menus, such as recommended daily calorie intake, or interpretive information such as a traffic light system or PACE (physical activity calorie equivalent) labels that indicate the number of minutes of exercise needed to burn off the calories consumed.

Based on the evidence produced by Sinclair and colleagues (2014\textsuperscript{[11]}), menu labelling with contextual or interpretive information is expected to lead to a reduction in the calories consumed (per purchase) of about 81 kcal. This number is further converted into a change in BMI using the same methodology as for the food labelling intervention, based on Hall et al (2011\textsuperscript{[8]}). Maximum reduction in calories (and BMI) is assumed one year following the beginning of the intervention, which approximately corresponds to 100 days of cumulative exposure, assuming people eat out about two times a week. Once reduced, the BMI is modelled to continue on a parallel lower trajectory.

The minimum eligibility age is set at five years old, as children can also be affected via their parents when they eat out together. Among those eligible, it is assumed that, across countries, at least 80% of the population occasionally have meals in restaurants or fast food places potentially targeted by this policy. For example, previous evidence found that four out of five Italians eat out at least two times a week (Censis Coldiretti, 2010\textsuperscript{[12]}). In the United Kingdom, a survey found that 78% of people eat out once a month, or more often (Worsfold, 2006\textsuperscript{[13]}). Finally, in line with the food labelling intervention assumption, it is assumed that about 15% of the population read and act upon menu labelling information. Thus, about 12% of those eligible are assumed to be exposed to this intervention (Grunert et al., 2010\textsuperscript{[10]}).

The intervention programme costs include governmental expenses on policy administration, planning and enforcement in the form of food inspections, and varies between USD PPP 1.15 and USD PPP 1.30 per capita annually across the countries included in the analysis. Costs do not account for the additional expenditure associated with designing and printing menu labels and for the nutritional analysis costs, likely to be borne by the private sector. For example, as mentioned in Chapter 8, the cost of the nutritional analysis to support the implementation of food labelling was estimated to be about USD 660 per food item in the United States. There can also be some installation costs to replace the menu boards, estimated to be about USD 550 in the United States (Food and Drug Administration, 2014\textsuperscript{[14]}).

**Mass media campaigns**

This intervention entails the implementation of a campaign via traditional media (e.g. radio, television and newspapers/magazines) to promote an active lifestyle in the population. The modelled intervention includes two 15-second television paid commercials, as in the mass media campaign to promote physical activity in the state of New South Wales, Australia (Bauman et al., 2001\textsuperscript{[15]}). In addition, the TV commercials can be combined with some other resources, such as advertisements in printed media, posters, leaflets, postcards, web sites and public relations events, as in the Active For Life campaign in the United Kingdom (Hillsdon et al., 2001\textsuperscript{[16]}).

According to the available evidence (Goryakin et al., 2017\textsuperscript{[17]}), within one month of the beginning of the intervention, the mass media campaign results in a 60% increase in the number of people who are considered at least moderately active. This proportion halves by the end of the first year and, then, goes to zero after another two years. In the model, it is assumed that for the less inactive individuals, the probability of moving into the new physical activity category is higher.

The campaign is modelled to cover all adults aged 18 years or older. The intervention runs in six waves, with each wave lasting for three years: between 2020 and 2022; between 2025 and 2027; between 2030 and 2032; between 2035 and 2037; between 2040 and 2042 and between 2045 and 2047. In line with the reviewed evidence, the coverage is assumed to be 100% (Goryakin, Suhlrie and Cecchini, 2018\textsuperscript{[18]}), with people repeatedly exposed to the intervention in all waves.
The cost consists only of the programme costs. Almost two-thirds of the cost is for the purchase of broadcasting time for the advertisements on national and local radio and television channels and to produce and distribute flyers and leaflets. The remaining resources are mainly devoted to hiring personnel to design, run and supervise the programme. This cost varies between USD PPP 1.93 and USD PPP 2.18 per capita annually across the countries included in the analysis.

**Prescribing physical activity**

This intervention involves brief advice given by a primary care specialist to an individual at high risk for chronic diseases linked to sedentary behaviour and lack of physical activity, followed by additional formal steps, such as a prescription for a minimum weekly amount of physical activity, a referral to an exercise referral scheme, or follow-up personalised counselling.

The intervention is modelled based on findings from a recent systematic review and meta-analysis (Goryakin, Suhlrie and Cecchini, 2018). Specifically, prescribing physical activity increases leisure (sports) physical activity by 168.6 extra metabolic equivalent of task (MET) minutes per week, which is approximately equivalent to 56 extra minutes of moderate exercise a week. However, total physical activity is likely to increase by a smaller amount, as people may adjust their behaviour by spending less time doing other types of exercise (Graf and Cecchini, 2019). Specifically, it was estimated that total physical activity will increase by about 96 MET-minutes per week when this adjustment is taken into account.

The eligible population is restricted to persons aged 50-75 years of age with at least one of the following risk factors: overweight; physical inactivity; diabetes; hypertension; smoking. In line with the reviewed evidence, it is expected that 26.4% of the eligible population will be exposed to the intervention, based on the data that: about up to 80% of people visit their general practitioner at least once a year in developed countries (Sanchez et al., 2015); 55% of patients are likely to participate (Goryakin, Suhlrie and Cecchini, 2018); and about 60% of doctors/practices agree to participate (Goryakin, Suhlrie and Cecchini, 2018). In line with the reviewed evidence, maximum effectiveness is achieved after six months and gradually wears off to zero by the end of the first year. Eligible persons can participate again in the future.

The cost consists of two components: programme and individual-level expenses. The programme cost comes from expenses on programme administration and on recruitment and training of doctors; while the individual costs consists of doctor-provided consultations and of maintaining contacts with the participating patients. As giving a prescription for physical activity can be done in the context of a routine primary care visit, it is assumed that only about 10% of the visit time is needed for such a prescription. Total intervention costs vary between USD PPP 1.61 and USD PPP 1.66 annually per capita.

**Mobile apps**

This intervention entails the implementation of a nation-wide introduction of a smartphone application promoting behaviours leading to weight reduction. These applications can help individuals count the numbers of steps they walk in a day, or estimate calories consumed by providing nutritional information for various foods and beverages. Further, they can take advantage of various technological options, for example by linking calorie information to product barcodes that can be scanned by phones; by generating charts on trends in calorie consumption and physical activity levels; by providing information on the nearby health and wellness events/facilities; by promoting health behaviours through various rewards programmes. It is assumed that the development and release of the application will rely on governmental marketing and promotion.

Based on an existing meta-analysis (Mateo et al., 2015), the intervention is assumed to lead to a drop in BMI by 0.43 kg/m² in participating people. In several studies included in the meta-analysis, mobile apps are compared with some control intervention (e.g. counselling or printed materials) rather than with a
complete absence of any intervention, so this effect is likely to be an underestimate of the true effect. It is also assumed that those participating remain active for one year, and that the maximum effect (0.43 kg/m² drop) is linearly achieved within one year. After that, people gradually revert to the old BMI within another year, as they decide not to use the app any longer.

The target group for this policy action is made up of individuals aged 15 to 64, broadly in line with the population groups included in the studies underlying the meta-analysis used to model the effectiveness of the intervention (Mateo et al., 2015[21]). In addition, based on findings from a previous study (Goryakin et al., 2017[17]), the population coverage is assumed to be 2.21% of the target group.

Intervention costs include the expenses of developing and updating the application, marketing it nationwide, as well as storing and processing the data generated by the application use. This cost varies between USD PPP 0.56 and USD PPP 0.63 annually per capita across the countries included in the analysis.

6.2.2. Policies widening the number of healthy choice options

School-based programmes

This intervention further scales-up and strengthens policies currently in place in many OECD countries mandating the inclusion of physical activity classes in the school curricula. More specifically, this intervention entails the inclusion of classroom lessons on the benefits of physical activity led by trained teachers and of moderate-to-vigorous physical activity sessions (including playing sports and aerobic exercise) as part of the school curriculum. In addition, the intervention also entails the distribution of nutritional education materials and provision of healthful foods in school canteens.

A meta-analysis of school-based programmes promoting both a healthier diet and additional physical activity found that these interventions lead to an overall mean reduction in BMI of 0.30 kg/m² (Wang et al., 2015[22]). This analysis already takes into account students’ compliance, so the average reduction is equally applied to all the schoolchildren. For each affected child, there is a linear reduction in BMI within a year of the programme’s implementation until the individual’s BMI drops by 0.30 kg/m², after which it stays constant on the lower parallel trajectory until the child graduates from school at age 18. It is also assumed that such programmes have a long-term effect as children are expected to acquire a habit of doing physical activity or eating more healthily. Specifically, consistent with the previous OECD analysis (Sassi et al., 2009[23]), it is assumed that after children turn 18, there is a linear decrease of the programme’s effectiveness by 50% (i.e. BMI is reduced by 0.15 kg/m²) over one year parallel to their baseline BMI trajectory, and then it stays at this level for the rest of life.

Since any policy in public schools is likely to be mandatory and apply to almost all students (probably with some exceptions for health-related reasons), it is assumed that about 90% of all public school students in both primary and secondary education can be affected (ages 8-18). If not selected in the first year in which the intervention is implemented, students remain ineligible for participation for the rest of their life.

The cost of the programme includes the programme component and the cost of delivering the intervention in the schools. Half of the total cost is spent on programme organisation costs, while the remaining half is split between training of teachers and food service staff, extra teaching and additional curricular activities, e.g. guest speakers, brochures, books, posters and equipment. The single most expensive item is extra teaching hours. Costs do not include changes in food service contracts, vouchers/coupons from sponsors and school nurse time. The annual cost is estimated to vary between USD PPP 2.78 and USD PPP 3.14 per capita across the countries included in the analysis.
Workplace programmes targeting sedentary behaviour

This intervention is modelled as an employer-sponsored programme to discourage sitting in the workplace by making sit-stand workstations and treadmill desks available to employees.

Based on the reviewed evidence (Chu et al., 2016[24]), this type of environmental intervention is expected to reduce sitting time by 72.78 min per eight-hour workday. For those concerned, it is assumed that this reduction will be achieved gradually within a year, after which the amount of sitting time will be maintained at a lower level until the individuals retire or become unemployed, whichever is sooner.

It is assumed that only full-time employees (aged 18-65 years) who work in service industries and in medium and large enterprises are potentially eligible for the intervention, and that, in line with the OECD analysis (Sassi et al., 2009[23]), 50% of such enterprises will choose to participate, offering their employees the opportunity to benefit from standing desks. The evidence on the participation of potentially eligible employees is not easily available. According to Chu and colleagues (2016[24]), the largest drop-out rate among the initially recruited programme participants was 62% in a study by Pronk and colleagues (2012[25]), which suggests that at least 38% of participants may be potential long-term users. Furthermore, it is assumed that about 10% of eligible employees are not willing to try using the desks even once. Therefore, conservatively, it is assumed that only about one-third of eligible employees (i.e. 34%) are willing to participate in the programme for a sufficiently long period of time. In addition, it is assumed that employees who do not join the intervention at the start will not join it in the future. In subsequent years, new people are added to the eligible pool only if they are employed for the first time and are aged between 18 and 65. In addition, if a person who was initially selected becomes unemployed, the person can only participate again in the case of re-employment.

The main intervention cost is the cost of equipment such as adjustable stand up desks, which can vary widely. Conservatively, a price at the higher range is assumed, at EUR 500 (about USD 570) up-front per desk. A further assumption is made that such desks will last for 10 years and that they will be used individually (i.e. that desks are not shared between employees). In this case, the annual cost varies between USD PPP 43 and USD PPP 144 per target person, or USD PPP 1.08-2.09 per capita across the countries included in the analysis. It is assumed that the governments will buy such desks for their employees, or will provide subsidies to the industry to buy such desks for private-sector workers. No other costs are assumed.

Workplace wellness programmes

Workplace wellness programmes can include a number of components, including health risk assessment for employees, self-help education materials, classes, seminars, group activities and individual counselling about healthy lifestyles. They can also provide various incentives (such as bonuses and reimbursements) to encourage participation in these activities (Baicker, Cutler and Song, 2010[26]). Increasingly, as for example in Japan, these programmes also entail environmental changes in the workplace by putting in place actions to promote a healthier diet (e.g. through changes in the food served by canteens) and to increase physical activity (e.g. by encouraging the use of stairs) (OECD, 2019[27]).

The effectiveness of this intervention is assumed based on a recent meta-analysis (Penalvo et al., 2017[28]), which concluded that a generic worksite wellness programme produces an average reduction in BMI of 0.28 kg/m². Based on the same study, it is assumed that 12 months after the beginning of the action, the intervention would reach its maximum effectiveness, producing a 0.64 kg/m² drop in BMI relative to baseline. After 24 months the drop in BMI decreases to 0.16 kg/m² relative to baseline, while the effect completely disappears after 36 months.

It is assumed that the proportion of people exposed to this intervention will be the same as in the workplace intervention for sedentary behaviour (see below). In line with the reviewed evidence, the exposure is assumed to last for 3 years only (Penalvo et al., 2017[28]). However, everyone (including previously
exposed employees) would have a chance to participate again in the programme. The participation is restricted to white collar, full-time employees working in medium and large service industry enterprises (within an 18-65 year age range). Other persons potentially eligible are those employed for the first time. If persons who initially joined become unemployed, they become eligible to be selected again in case of re-employment in one of the enterprises participating to the scheme.

The participation is restricted to white collar, full-time employees working in medium and large service industry enterprises (within an 18-65 year age range). Other persons potentially eligible are those employed for the first time. If persons who initially joined become unemployed, they become eligible to be selected again in case of re-employment in one of the enterprises participating to the scheme.

The intervention cost is likely to vary considerably, depending on programme features and local prices and may include, for example, costs of initial risk assessment, telephonic coaching and various incentives. In line with some available evidence (Hall, 2011[28]), the intervention costs were assumed to vary between USD PPP 118 and USD PPP 133 per target person, or USD PPP 6-8 per capita across the countries included in the study. While it is possible that certain types of workplace wellness programmes, particularly if very comprehensive, may cost more than this, this figure is assumed to cover the costs of implementing the programme in public institutions and incentives that the government could give to enterprises deciding to participate in the programme.

Expanding public transport

This intervention entails the expansion of mass transit options, publicly or privately provided, with the objective to increase people’s access to active transport options.

The effectiveness to model the intervention is based on findings from a systematic review and meta-analysis (Xiao, Goryakin and Cecchini, 2019[30]) concluding that each person exposed to a new public transport option increases transport-related physical activity by 105.6 MET-minutes/week, which is roughly equivalent to an extra 35 minutes of walking per week. As described in the section on prescribing physical activity, the change in total physical activity is likely to be smaller as individuals exposed to the intervention may choose to reduce other types of physical activity (e.g. leisure time physical activity). Therefore, this change in transport-related physical activity was converted into a change in total physical activity, using methodology described in Graf and Cecchini (2019[19]). Specifically, total physical activity was estimated to increase by about 60 MET-minutes per week, corresponding to an equivalent of about 20 minutes of walking per week.

This intervention is assumed to affect both children and adults. Children, in particular, may benefit from public transport both when they travel with their parents, and when they travel to school. In a number of countries, a compulsory minimum education age varies between five and six years, so the age of five was chosen as a lower cut-off for this intervention. Since public transport is already well developed in most OECD countries, a modest scenario is modelled of expanding access to public transport to an additional 1% of the eligible population (i.e. persons over five years old), every five years. The maximum effectiveness is assumed to be achieved one year after the start of implementation, after which the physical activity level will remain at the higher level until the end of life for all those affected.

No implementation costs are considered for this intervention. While the cost of building a new public transport network can be very expensive, the main goal of public transport is not to increase physical activity, but to help people move around.

6.2.3. Policies to regulate or restrict actions promoting unhealthy choice options

Food advertising regulations

This intervention entails the implementation of a complete statutory ban of food advertisements on television, targeting children less than 18 years of age, with the intent of limiting their consumption of calorie-dense and/or highly processed food. The intervention is assumed to be initiated by the government, and may include both regulatory and enforcement components to support maintenance of healthier dietary patterns among children.
Based on a systematic review and meta-analysis (Boyland et al., 2016[31]), as well as further analysis described in (Goryakin et al., 2017[17]), this statutory ban would correspond to a 0.31 kg/m² lower average BMI among children. This is also consistent with a previous OECD study (Sassi, 2010a), that modelled a reduction of BMI of between 0.13 kg/m² to 0.34 kg/m² among children in comparable age groups.

This policy is assumed to affect all children aged between 5 and 18. The reduction in BMI is assumed to be age dependent: for those between 5 and 12 years, BMI would be reduced by 0.12 kg/m² within one year, and staying on a new parallel trend until the age of 12. For those between the ages of 12 and 18, the reduction is assumed to be larger: a drop in BMI by 0.31 kg/m² relative to counterfactual within one year. Finally, those reaching the age of 18 would have a linear decrease of effectiveness until reduction of BMI to 0.155 kg/m² relative to the counterfactual, which remains for the rest of life. Based on research showing that exposure to advertising in childhood may affect consumer product evaluation that persists for many years into adulthood (Connell, Brucks and Nielsen, 2014[32]), it is assumed that this effect will persist for the rest of life.

The intervention programme will include expenses on administration and planning at the national and local levels, as well as monitoring and enforcement costs. In addition, minor training may be required for communication authority staff charged with the task of overseeing the implementation of the scheme. This cost varies between USD PPP 0.52 and USD PPP 0.59 per capita annually across the countries included in the analysis.

Table 6.1 provides a brief summary of the key inputs to model the policy scenarios described above.

<table>
<thead>
<tr>
<th>Target age</th>
<th>Exposure</th>
<th>Effectiveness</th>
<th>Per capita cost, USD PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;5 y.o.</td>
<td>15% of eligible</td>
<td>0.40% lower BMI</td>
<td>1.15-1.30</td>
</tr>
<tr>
<td>&gt; 5 y.o.</td>
<td>12% of eligible</td>
<td>1.05-1.31% drop in BMI after 1 year of intervention</td>
<td>1.15-1.30</td>
</tr>
<tr>
<td>&gt; 5 y.o.</td>
<td>1% expansion every 5 years</td>
<td>+105.6 MET min/week</td>
<td>n/a</td>
</tr>
<tr>
<td>18-65</td>
<td>2.31-6.95%</td>
<td>-72.78 min of SB/8 h workday</td>
<td>1.08-2.09</td>
</tr>
<tr>
<td>18-65</td>
<td>2.31-6.95%</td>
<td>&lt;12 m: -0.64 kg/m²</td>
<td>6-8</td>
</tr>
<tr>
<td>8-18 y.o.</td>
<td>90%</td>
<td>-0.30 BMI until 18; after 18: -0.15 BMI</td>
<td>2.78-3.14</td>
</tr>
<tr>
<td>Between 5 and 18 y.o.</td>
<td>100%</td>
<td>-0.12 BMI (between 5 and 12 y.o.); -0.31 BMI (between 12 and 18 y.o); -after 18: -0.155 BMI</td>
<td>0.52-0.59</td>
</tr>
<tr>
<td>&gt;18 y.o.</td>
<td>26.4%</td>
<td>168.6 extra MET minutes per week, lasting 1 year</td>
<td>1.61-1.66</td>
</tr>
<tr>
<td>&gt;18 y.o.</td>
<td>100%</td>
<td>60% increase in at least moderate activity after 1 month; 30% after 1 year, 0 after 2 years.</td>
<td>1.93-2.18</td>
</tr>
<tr>
<td>&gt;18 y.o.</td>
<td>2.21%</td>
<td>0.43% drop in BMI after 1 year</td>
<td>0.56-0.63</td>
</tr>
</tbody>
</table>

Source: OECD analyses of the literature; meta-analyses.
6.3. Policies to tackle overweight and unhealthy lifestyles: what works?

6.3.1. Obesity policies can contribute to significant health gains

All the interventions are predicted to make a positive effect on population health. The largest absolute reductions are expected to occur for cardiovascular diseases (CVDs) and diabetes, with, in from the menu labelling intervention, up to 700,000 cases of CVDs (or 24,000 annually) and 340,000 cases of diabetes (or 11,000 annually) avoided between 2020 and 2050 (Figure 6.1). In general, menu labelling and mass media campaigns are evaluated as the most effective interventions, while food advertising restrictions and school-based programmes produce a smaller impact. However, it should be noted that food advertising restrictions and school-based programmes target children and, therefore, are not particularly effective in the short term. Thus, no child targeted under these two interventions will achieve the age of 50 by the end of the simulation period, which means that most of their health-related benefit is not captured by these numbers. The largest impact on the number of new cases avoided, as a share of total new cases, is predicted for diabetes, with a reduction of up to 0.1% in the case of menu labelling and mass media interventions.

To put this in context, 700,000 new cases avoided as a result of implementing menu labelling represent only about 0.16% of all CVD cases attributable to overweight (see Figure 3.4, Chapter 3). Therefore, there is large scope for potential further action to either upscale existing interventions, or introduce new ones to make a substantial impact on obesity-attributable disease incidence.

When considering the policy effect on the aggregate measures of population, population-wide interventions such as food labelling, menu labelling and mass media campaigns produce the largest health gains, resulting in between 51,000 and 115,000 LYs gained annually in the 36 countries included in the analysis. Menu labelling is also predicted to perform the best in terms of the impact on DALYs (Annex Figure 6.A.1), with a gain of 2.7 million DALYs by 2050 in all countries combined, followed by mass media campaigns, saving up to 2.3 million DALYs cumulatively by 2050, and by food labelling (1.2 million). The largest cumulative effect on DALYs is predicted in Mexico, Germany and in Japan, and the lowest in Malta and Iceland. It is also notable that the effect of menu labelling on DALYs does not fall off over time, even after discounting (Annex Figure 6.A.1), suggesting that it pays off to wait as new cohorts of people are affected in the future.

Once results are standardised by the population size, all the interventions are predicted to lead to a gain in LYs and DALYs, with the effect on DALYs (measuring morbidity) being larger than on LYs (measuring life expectancy) (Figure 6.2). This is especially true for the interventions targeting children, who will still be too young in 2050 when the simulation period ends, and therefore mostly unaffected by the impact of the interventions on their mortality risk.

As for regional differences, the interventions will have a larger impact on health outcomes in Central and Eastern European countries, with up to 59 DALYs per 100,000 that can be gained annually in Bulgaria for mass media campaigns (Figure 6.2). This is almost four times greater than in the Netherlands, the Western European country with the highest population-standardised impact on DALYs for this intervention. The stronger effect of policies on DALYs in Central and Eastern European countries is mostly due to the relatively large prevalence of overweight (see Figure 2.1 in Chapter 2), the large burden of premature mortality caused by related chronic diseases (Figure 3.5 in Chapter 3) and the greater prevalence of overweight-related diseases in that region, especially cardiovascular conditions.

Finally, menu labelling is expected to perform particularly well in Western Europe, while mass media campaigns will do so in Central and Eastern European countries. The main reason why mass media campaigns are predicted to perform so well in Central and Eastern Europe is because a relatively large proportion of people in these countries are already at least moderately active.
Figure 6.1. The impact of interventions on disease incidence
Cases avoided, total, 2020-2050

Note: Bars represent absolute reduction in the number of new diseases cases; the markers represent percentage reduction in the number of total new cases, as a share of total new cases, between 2020 and 2050.
Source: OECD analyses based on the OECD SPHeP-NCDs model, 2019.

StatLink 2 https://doi.org/10.1787/888934007639
Figure 6.2. Population-standardised effect of interventions on health

Life years (LYs) and disability-adjusted life years (DALYs) gained per 100 000 population annually, 2020-2050
6.3.2. Obesity policies can reduce health expenditure

Although it might seem intuitive to expect that reducing the obesity burden should lead to health expenditure savings, this is by no means guaranteed, since people who avoid obesity-related conditions as a result of preventative interventions may still suffer from other diseases, and/or accumulate health expenditures as a result of living longer (Van Baal et al., 2008[33]). Nevertheless, findings from the OECD model suggest that this is not the case for the set of assessed public health actions: all the interventions are predicted to contribute to the reduction in health expenditure. The effects of two interventions in particular stand out: menu labelling and mass media campaigns. On average, the menu labelling intervention can save USD PPP 0.99 per capita annually across the 36 countries studied, the largest impact compared to the other interventions. The other interventions will produce average savings in health expenditure ranging from USD PPP 0.04 to USD PPP 0.97 per capita per year. Scaled up to the national level, menu labelling is predicted to save more than USD PPP 13 billion across all countries cumulatively.
by 2050 (or USD PPP 922 million in undiscounted costs annually), with the largest cumulative savings predicted in Japan (USD PPP 2.7 billion by 2050) and in Germany (USD PPP 2.3 billion by 2050). The interventions targeting children, such as advertising bans and school-based programmes, are predicted to make a smaller impact on health expenditure, mostly due to the relatively short span of the microsimulation horizon unable to capture their savings later in life. In addition, as discussed in the following section, these interventions make a significantly more pronounced impact on labour force productivity, as well as on the overall economy.

There are important geographical differences in the impact of the interventions. Menu labelling generally performs the best in North and Western Europe, and in Japan. For example, more than USD PPP 37 per capita in medical expenditure can be saved cumulatively by 2050 in Germany (Annex Figure 6.A.2). On the other hand, the lowest savings on a per capita basis for this intervention are predicted in some Central and Eastern European countries, Mexico and South Africa. Two main factors drive this pattern. First, medical treatments in Central and Eastern Europe, Mexico and South Africa are generally less expensive than in other countries and, therefore, a decrease in the number of cases to treat has a lower impact on total savings in health expenditure. Second, the growth in life expectancy caused by preventive interventions, which is particularly pronounced in Central and Eastern Europe, increases the probability that individuals develop other diseases that bring additional expenditure later in life. This pattern is also in contrast to the epidemiological results, where these interventions were found to make the largest impact on DALYs in Central and Eastern European countries (see above).

For mass media campaigns, the situation is different: the savings in Western, Central and Eastern European countries are generally equally large. This is mostly due to the fact that mass media campaigns are particularly effective at affecting population health in Central and Eastern Europe (see above), which compensates for the lower cost of treatment in that region.

Finally, Figure 6.3 compares the per capita annual cost of implementing the interventions and the reductions in the associated health expenditures. In the case of expanding public transport, the costs of implementing the intervention were assumed to be zero. In general, the intervention costs significantly outweigh the health expenditure savings resulting from the policy implementation, with the exception of mass media campaigns and menu labelling interventions which are sometimes cost saving. Nevertheless, Figure 6.3 does not necessarily indicate that these interventions represent poor value for money, as shown below.
Figure 6.3. Cost of interventions and their impact on health expenditure
USD PPP per capita, annually, 2020-2050
6.3.3. The impact of obesity policies on the labour market and related costs

Overweight causes lower employment rate, greater absenteeism and presenteeism, as well as increases in the number of people who retire early. Therefore, implementation of policies designed to reduce the burden of overweight provides an opportunity to reduce economic costs associated with suboptimal utilisation and productivity of the labour force.

Results confirm that the interventions affect such costs in the expected direction. Thus, across all countries, 21 000 more people will be in employment annually as a result of the menu labelling intervention, while mass media campaigns will help add 28 000 people. When considering the effect on total employment, which also takes into account missed days of work due to illness, being less productive at work, as well as missed work due to early retirement, menu labelling will help add up to 49 000 labour market outputs to the workforce each year in all countries, while mass media campaigns about 51 000. This effect is
predicted to be the largest in Germany, where about 4 000 individuals can be added to the workforce annually for each of the four interventions: mass media campaigns, menu labelling, workplace sedentary behaviour and workplace wellness (Annex Figure 6.A.3), while the lowest effect is predicted to be in Malta, where only 20 individuals will be added to the workforce annually in the case of menu labelling.

On a per capita basis, mass media campaigns will make the strongest impact on labour market outputs, followed by menu labelling. On the other hand, this effect will be the lowest for the transport policy, mostly due to the small population coverage which also includes people of non-working age. Mass media campaigns are predicted to make the largest impact on labour market outputs in Estonia, with up to 10 people per 100 000 being in employment annually, followed by Bulgaria (9.8 per 100 000) and Hungary (9.1 per 100 000).

When expressed in monetary terms by converting missed work time into missed wages, in total each year, about USD PPP 12 billion in labour market costs can be saved in all countries combined as a result of implementing the modelled policies. This is due to the following components: increase in employment rate (4.9 billion); reduction in presenteeism (4.8 billion), reduction in absenteeism (2.2 billion) and reduction in early retirement (0.2 billion). Among the policies, the largest effect is due to the implementation of mass media campaigns and menu labelling, with the corresponding expected saving of USD PPP 1.92 billion and USD PPP 2 billion in labour market costs in all the countries combined. When standardised by the population size (Figure 6.4), the combined labour productivity cost avoided for the mass media intervention will be the highest in Central and Eastern European countries, with up to USD PPP 9.2 per capita saved in Estonia.

As shown above, medical expenditure-related savings are considerably larger in Western than in Central and Eastern Europe, due mainly to the higher cost of medical treatment in the former region. The fact that the reverse is true for labour market-related costs is largely due to the fact that people living in Central and Eastern Europe tend to develop complications at a younger age, compared to individuals living in Western Europe. This means that labour market losses are larger in Central and Eastern Europe.

Finally, the figures in this section indicate that interventions targeting children, as well as workplace-based interventions, perform well on the labour market cost measures. This is in notable contrast to the population health and health expenditure outcomes, and is attributable to the fact that these interventions, although not having much effect on these outcomes within the horizon taken into account, can still improve productivity during a person’s working life, reducing the prevalence of overweight, and/or by delaying the development of chronic diseases towards later life.
Figure 6.4. Labour market economic costs avoided
USD PPP per capita, annually, 2020-2050
6.3.4. Impact on the broader economy

Although intervention costs are generally predicted to outweigh health expenditure savings, they may still offer a good return on investment, especially after a number of years. In fact, interventions usually require up-front investment that, in many cases, may be very large relative to the health improvements they produce and to the gains in terms of health expenditure, especially in early years. However, over time, implemented policies may represent increasingly good value for money invested, especially if their effect on labour market productivity and utilisation is also taken into account.

Analysis in this chapter shows that economic gains from increased labour productivity and utilisation will in general considerably exceed the savings from reduced health expenditure. This also parallels findings in Chapter 3 (compare Figure 3.8 with Figure 3.11). If such labour market costs are taken into account, the return on investment for some interventions will improve even further, in many cases implying cost-saving.
The simulated effect on GDP supports this expectation. In most countries, policies are expected to contribute to an increase of GDP in the range of 0.005%-0.021% annually (Figure 6.5). Taking 0.005% as a conservative assumption, this corresponds to an increase of USD PPP 1.7 billion in GDP for the 36 countries analysed. The range of GDP benefit also corresponds to approximately USD PPP 1.3 to 7.7 per capita per year.

Comparing the increase in GDP to the cost of implementing the policies in all 36 countries, the policies appear to provide good value for money. For more expensive policies, such as workplace wellness, prescribing physical activity and school-based programmes, the total return in GDP across the 36 countries is roughly equal to the total cost of implementing the policy in all countries. The cost of implementing food labelling or mobile apps is about 40% of the benefit in terms of GDP. Four remaining policies (regulation of advertising, mass media campaigns, menu labelling and workplace sedentary behaviour) cost around 20% or the conservatively predicted benefit to the economy. In other words, for each USD PPP 1 invested, around USD PPP 4-5 will be returned in the form of the economic benefit on average each year over the next 30 years for these interventions.

**Figure 6.5. The impact of interventions on GDP**

Percentage change in GDP due to intervention, average 2020-2050

![Figure 6.5. The impact of interventions on GDP](image)

Note: Blue dots are countries analysed, black dot is the average across countries.

### 6.4. Combining policies into coherent prevention strategies has greater impact

Combining public health actions into prevention packages provides multiple advantages. Causes of unhealthy lifestyles and ultimately of obesity are multifaceted. A first substantial advantage of combining single actions into prevention strategies is that packages of interventions can address multiple causes at the same time. In addition, packages can target different population groups simultaneously producing greater results at the population level. Finally, policies within a package can interact with each other...
sustaining positive behavioural changes in a more than additive fashion. For example, there is some evidence that the combination of mass media campaigns and food labelling schemes may have a greater impact on sales of healthy products (Surkan et al., 2015[34]). Analyses carried out with the OECD model take into account these first two components but adopt a conservative assumption on the potential super-additivity of combining policies in packages and no additional effect is considered. The following three policy packages were evaluated:

- Communication package: focusing primarily on actions to increase public awareness. Actions include food labelling, advertising restrictions and mass media campaigns and are already implemented in many, but not all, OECD countries, with much variability in terms of implementation and design. The package entails the implementation of the most effective version of these actions, scaling up policies already in place.

- Mixed package: containing policies which are less often implemented by OECD countries, but which show promise. The package encompasses menu labelling, prescribing physical activity and workplace wellness programmes.

- Physical activity package: primarily encompasses environmental changes to promote an active lifestyle and includes prescribing physical activity, public transport interventions, physical education in schools and actions to counteract workplace sedentary behaviour. These interventions are less often implemented by OECD countries.

Upscaling the communication package is predicted to have the largest effect on health outcomes, followed by the mixed package and then by the physical activity package. Specifically, by 2050, the communications package is expected to prevent almost 1.3 million cases of CVDs (or 40 000 cases annually, 6 300 of which in Mexico); 0.844 million cases of diabetes (or 27 000 cases annually), 0.158 million cases of dementia (or 0.104 million cases of cancers (or 3 360 annually, about 500 of which will be in Japan) (Figure 6.6). This is also more than the sum of the component interventions belonging to the communications package: for example, three separate interventions, if implemented separately, are only predicted to avoid 0.854 million cases of CVDs and 0.653 million cases of diabetes. The share of diseases as a proportion of total diseases avoided is quite similar across packages: about 55-60% for CVDs, and about 37-42% for diabetes (Figure 6.6).

The communications package will also make the strongest impact on DALYs and LYs gained, compared to the other two packages. For example, investing in a communication package to upscale policies already in place in many OECD countries can result in a gain of 205 000 LYs per year across all the 36 countries included in the analysis. The impact of the communications package will be greater in Central and Eastern European countries, with up to 76 LYs gained annually per 100 000 people in Bulgaria (Figure 6.7). Again, this finding is consistent with the large obesity-related disease burden observed in Central and Eastern Europe, and the potential of these interventions to make a difference there. The communication package is also predicted to make the largest impact on health expenditure (Annex Figure 6.A.4), although as a rule, the cost of implementing the interventions will be higher than the savings in health expenditure. Cumulatively, the communications package is predicted to save about USD PPP 26 billion by 2050. The largest annual effect of this package will be observed in Netherlands (USD PPP 3.9 per capita), while the smallest in South Africa (USD PPP 0.53). The health expenditure savings will generally be greater in Western and Northern Europe as well as in Japan.
### Figure 6.6. New cases avoided due to implementation of packages

Total number of cases, 2020-2050

<table>
<thead>
<tr>
<th>Package Type</th>
<th>Number of Cases</th>
<th>Percentage of Total Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication package</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVDs</td>
<td>1400000</td>
<td>0.25%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1200000</td>
<td>0.20%</td>
</tr>
<tr>
<td>Dementia</td>
<td>800000</td>
<td>0.15%</td>
</tr>
<tr>
<td>Cancers</td>
<td>600000</td>
<td>0.10%</td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>600000</td>
<td>0.10%</td>
</tr>
<tr>
<td>Injuries</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>COPD</td>
<td>0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

| **Mixed package** |                |                           |
| CVDs              | 1200000         | 0.18%                     |
| Diabetes          | 1000000         | 0.16%                     |
| Dementia          | 800000          | 0.14%                     |
| Cancers           | 600000          | 0.12%                     |
| Cirrhosis         | 600000          | 0.12%                     |
| Injuries          | 0               | 0.00%                     |
| COPD              | 0               | 0.00%                     |

| **Physical activity package** |                |                           |
| CVDs                          | 700000          | 0.14%                     |
| Diabetes                      | 600000          | 0.12%                     |
| Dementia                      | 500000          | 0.10%                     |
| Cancers                       | 300000          | 0.08%                     |
| Cirrhosis                     | 300000          | 0.08%                     |
| Injuries                      | 0               | 0.00%                     |
| COPD                          | 0               | 0.00%                     |

Note: Bars represent absolute reduction in the number of new disease cases; the markers represent percentage reduction in the number of total new cases as a share of total new cases, between 2020 and 2050.

Source: OECD analyses based on the OECD SPHeP-NCDs model, 2019.

StatLink: [https://doi.org/10.1787/888934007734](https://doi.org/10.1787/888934007734)
The communication package is predicted to make the largest impact on the productivity-related costs, saving up to USD PPP 5.3 billion per year in all the countries combined. This is due to the following components: USD PPP 1 billion in absenteeism-related costs; USD PPP 2.1 billion in presenteeism; USD PPP 2.15 billion due to the employment rate and USD PPP 0.1 billion in early retirement costs. When standardised by the population size, the largest reduction will be in Switzerland with savings of USD PPP 19 per capita annually. In addition, each year, 57 000 more people will be in employment as a result of the communications package; 40 000 as a result of mixed package, and 35 000 as a result of physical activity package. On a per capita basis, the largest increase in employment will be in Bulgaria (14 per 100 000 annually).

A mixed package also shows significant promise. Although it contains policies which are still rarely implemented, their upscaling can produce similar results, leading to almost 160 000 LYs gained annually and savings for USD PPP 23 billion cumulatively by 2050. A package to promote physical activity is predicted to produce smaller, but still significant effects, by leading to a gain of 70 000 LYs and by saving USD PPP 17 billion in health expenditures. The three packages would also avoid between 5.2 DALYs and 2 million DALYs in all modelled countries by 2050.

The impact on GDP will be also substantial, with the communication package expected to produce an impact on GDP varying between 0.02% and 0.11% across the countries included in the study. The other two packages – the mixed package and the physical activity package – will produce a smaller effect, generally in the order of magnitude of 0.01% and 0.06%, respectively, compared to the communication package. Overall, for each USD invested in one of the policy packages, between USD 1.3 and USD 4.6 will be returned in the form of economic benefits each year.

To sum up, the communication package is predicted to perform better than the other packages, while also having a stronger effect compared to implementing the three component interventions separately. The relatively strong performance of communication package is not surprising, as it includes such policies as mass media campaigns and food labelling, which were among the top three performing interventions in almost all countries. These policies are already implemented in many countries, although in many cases not in their most effective version. Therefore, ensuring a further roll-out of communication policies that already have good evidence base on their effectiveness is a promising avenue for the countries to consider.
Figure 6.7. Population-standardised effect of packages on health

Life years (LYs) and disability-adjusted life years (DALYs) gained per 100 000 population annually, 2020-2050
6.5. Conclusions

This section shows that population-wide interventions such as food labelling, menu labelling and mass media campaigns will produce the largest health gains and largest savings in health expenditure. Although the costs of running the interventions are usually higher than the resulting health savings, the labour market gains are usually several times larger than the reductions in medical expenditures. When this effect on labour market inputs is taken into account, the policies appear to provide very good value for money: for every USD 1 invested in all the interventions, the total GDP return is generally at least equal to their cost, and for the best performing interventions, it can be 4-5 times bigger. Finally, the communication package is predicted to perform better than the other packages, while also demonstrating that it has a stronger combined effect compared to implementing the three component interventions independently.
References


Censis Coldiretti (2010), Primo rapporto sulle abitudini alimentari degli italiani. Sintesi dei principali risultati.


Annex 6.A. Additional analyses

In this section, some additional results are shown demonstrating a potential impact of interventions (and of their packages), on health and economic outcomes, separately for each country. First, Annex Figure 6.A.1 shows the progression of cumulative DALYs gained over time resulting from the implementation of ten modelled interventions. Next, Annex Figure 6.A.2 demonstrates the predicted cumulative savings in medical expenditures, and how they change over time. Annex Figure 6.A.3 shows how the interventions can contribute to increases in the labour force. Finally, Annex Figure 6.A.4 compares the costs of implementing the packages with the potential savings in health expenditure resulting from their implementation.
Annex Figure 6.A.1. Cumulative disability-adjusted life years (DALYs) gained

Cumulative number of DALYs gained, discounted, 2020-2050
Source: OECD analyses based on the OECD SPHeP-NCDs model, 2019.

StatLink: https://doi.org/10.1787/888934007772
Annex Figure 6.A.2. Cumulative savings in health expenditure
USD PPP per capita, discounted, 2020-2050
Source: OECD analyses based on the OECD SPHeP-NCDs model, 2019.

StatLink  
https://doi.org/10.1787/888934007791
Annex Figure 6.A.3. Increases in workforce
Number of workers added annually, 2020-2050
Note: FLab: Food labelling; MAp: Mobile apps; MLa: Menu labelling; MM: Mass media campaigns; PPA: Prescription of physical activity; PTr: Public transport; RArd: Regulation of advertising; ScP: School-based programmes; WSe: Workplace sedentary behaviour; WW: Workplace wellness.
Source: OECD analyses based on the OECD SPHeP-NCDs model, 2019.

StatLink: https://doi.org/10.1787/888934007810
Annex Figure 6.A.4. Cost of packages and their impact on health expenditure
USD PPP per capita, annually, 2020-2050
Note: PA: physical activity package; Mix: mixed package; Com: communications package
Source: OECD analyses based on the OECD SPHeP-NCDs model, 2019.

StatLink: https://doi.org/10.1787/888934007829
Notes

1 Throughout this chapter, the nutritional status of individuals is defined according to WHO guidelines and thresholds and uses body-mass index (BMI). Overweight is defined as a BMI higher than 25 kg/m²; pre-obesity is defined as a BMI of 25-30 kg/m²; and obesity is defined as a BMI higher than 30 kg/m². Obesity can be further divided into class I, class II and class III obesity. Class I obesity is the milder form of obesity and is defined as a BMI of 30-35 kg/m²; class II obesity is defined as a BMI of 35-40 kg/m²; while class III obesity is defined as a BMI over 40 kg/m². Morbid obesity includes class II and class III obesity and is defined as a BMI higher than 35 kg/m². Further information can be found in Chapter 2 – Box 2.1. Using body mass index (BMI) to define levels of adiposity.

2 The full list of countries analysed in this chapter includes: Australia, Austria, Belgium, Bulgaria, Canada, Cyprus, Czech Republic, Germany, Denmark, Estonia, Finland, France, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Japan, Lithuania, Latvia, Luxembourg, Mexico, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, South Africa, United Kingdom.

3 Unless otherwise specified, all presented results are undiscounted.

4 Health expenditure measures the final consumption of health care goods and services for personal health care including curative care, rehabilitative care, preventative care, ancillary services and medical goods but not long-term care.