The economic and fiscal effects of an increase in medicines funding

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Authors: Killian Destremau, Connor McIndoe, Nathaniel Robson, and Zachary Bartley

Peer reviewer: Hillmarè Schulze

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Executive summary

Investing in medicines is justified on economic and fiscal grounds

Increasing medicines funding to the OECD average is expected to generate economic and fiscal returns that outweigh the additional cost.

Improved access to medicines lifts productivity and economic growth over time, while offsetting the initial investment through higher Crown revenue and benefits to the health system. Increased medicines funding is fiscally positive to the Crown over the long term, and also delivers wider economic and health benefits.

Medicines and vaccines are a core part of a modern health system. When effective medicines are not available, disease progresses and pressure shifts elsewhere to hospitals, specialists, patients, families, and employers. Medicines prevent disease, treat and manage illness, reduce hospitalisations and, increasingly, can transform or even cure diseases that were previously life-limiting or required lifelong care.

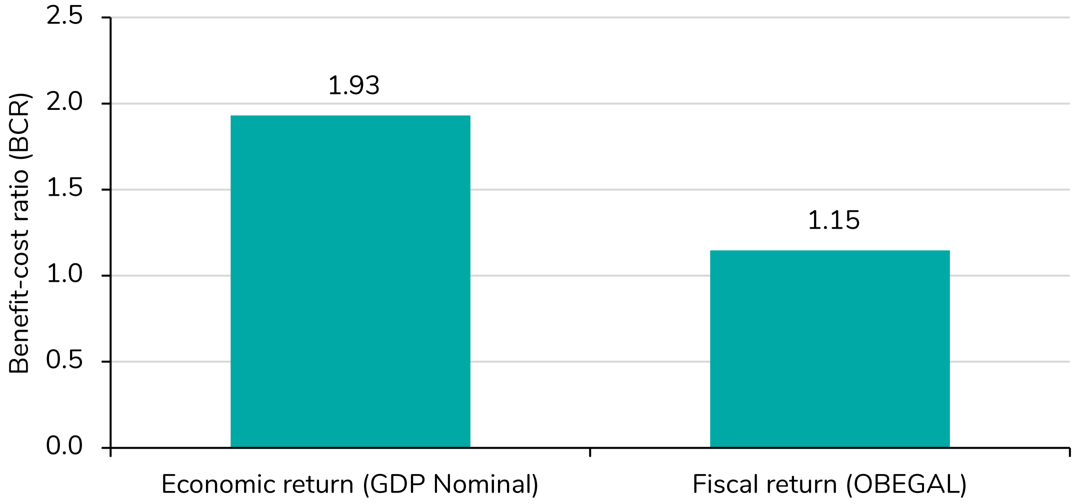
New Zealand's funding of medicines, including vaccines, as a share of health expenditure is low compared to the OECD average. New Zealand's total pharmaceutical expenditure is $1.5 billion, which represents 4.9 percent of total health expenditure. The OECD average is 13.3 percent. To match the OECD average, an estimated additional $2.7 billion in spending would be required.

Investment in medicines delivers returns to the economy and the Crown

The economic return for every additional $1 invested in medicines funding, measured by nominal gross domestic product (GDP), is estimated at $1.93. The fiscal return, measured by improvement in the Operating Balance Before Gains and Losses (OBEGAL) relative to the status quo, is estimated at $1.15 for every $1 invested.

Figure 1 presents the estimated benefit-cost ratio from increased funding for medicines. A benefit-cost ratio compares the estimated benefits of an investment against its costs, with a benefit-cost ratio greater than one indicating that benefits exceed costs.

Figure 1 Benefit-cost ratio (BCR)

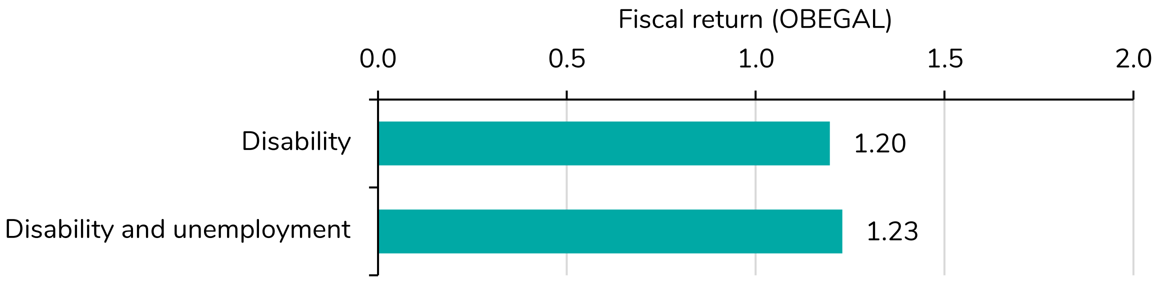


Source: BERL analysis

Increasing medicine funding would deliver wider economic and social benefits

Figure 2 summarises the wider economic benefit-cost ratio for the fiscal return by including the reductions in disability and unemployment welfare payments. The literature supports the direction of these benefits, but the size of the impact is less certain and should be interpreted with caution.

Figure 2 Wider economic returns (benefit-cost ratio) from increasing medicines funding



Source: BERL analysis

The direct economic and fiscal benefits of medicines are the focus of this assessment, rather than a full social cost-benefit analysis. The analysis excludes social and welfare benefits, therefore, the overall case for increased medicines funding is likely to be stronger than the quantified results. The core modelling does not monetise the full social value of better health, and excludes wider indirect economic effects that may arise through second-round economic activity.

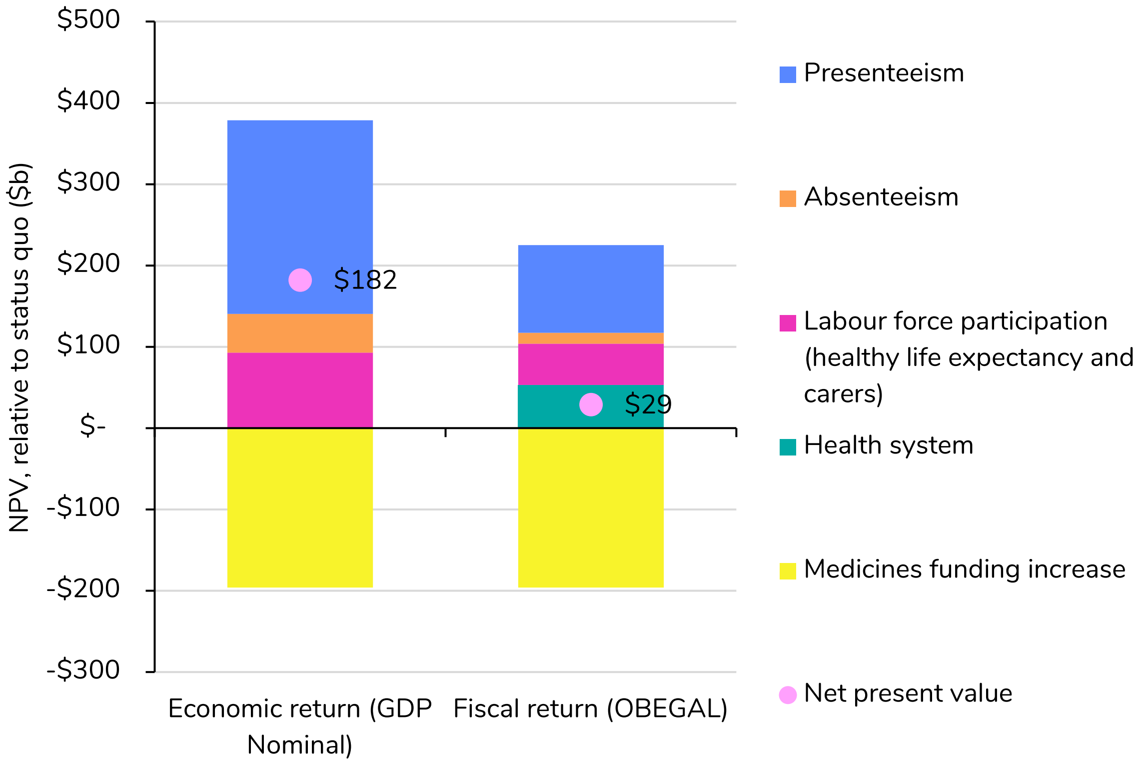
Better health supports a more productive economy

New Zealand's life expectancy is close to the OECD average, however, healthy life expectancy is lower. New Zealanders spend a smaller share of their lives in good health, which affects their ability to remain in work, work productively, and avoid reliance on higher-cost health services.

The intervention logic for increased medicines funding is that it is expected to improve disease management, reduce avoidable complications, support more years lived in good health, and improve productivity. We assess these effects, and quantify the benefits from medicines, across two channels: changes in demand on the health system, and the labour productivity effect on the labour force in terms of improved healthy life expectancy and reduced absenteeism and presenteeism.

Health system benefits are modelled as lower future demand for downstream services, particularly hospital care. Productivity benefits are modelled through higher labour force participation, reduced absenteeism, and reduced presenteeism. Figure 3 presents the net present value of the increase in medicines funding scenario. The net benefits for the economic return (nominal GDP) and the fiscal return (OBEGAL), respectively, are $182 billion and $29 billion over 35 years.

Figure 3 Net present value of costs and benefits of increasing medicines funding – from 2027 to 2062, relative to the status quo



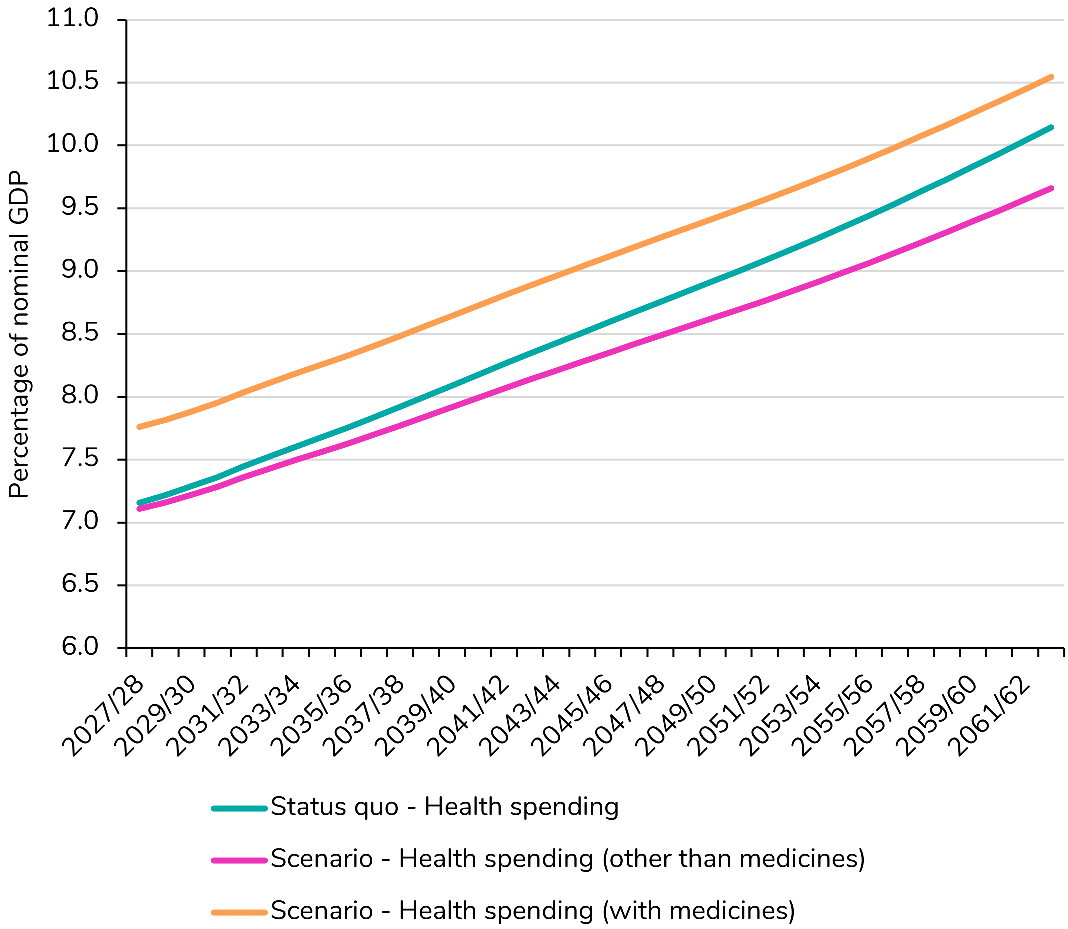
Source: BERL analysis

Investing in medicines helps manage future pressure on the health system

New Zealand faces fiscal pressure over the medium- and long-term. Over coming decades demographic change will place increasing pressure on public finances. The cost of superannuation and healthcare will increase, while the size of the working-age population will decrease. Over the long-term, increased access to medicines is expected to reduce demand, or divert resources across health services by improving disease control, reducing avoidable complications, and shifting some care away from hospitals, emergency care, and ongoing service use.

Over the next 35 years, higher medicines funding is projected to increase Core Crown health expenses by 0.4 percent of GDP, from 10.1 of GDP to 10.5 percent. The cost of increasing medicines funding is partly offset by a reduction in other health expenditures relative to the status quo. When excluding the medicines funding increase, other health spending expenditures are reduced as a percentage of GDP by 0.5 percent, from 10.1 percent to 9.7 percent of GDP (Figure 4).

Figure 4 Health expenditure in status quo and higher medicines funding scenarios



Source: BERL analysis

Core Crown health expenses, excluding the cost of the medicines funding increase, would be estimated to be on average 98.6 percent of baseline health expenses (1.4 percent lower) over the projection period, and approximately $5 billion lower by the end of the projection period. Health system benefits should be interpreted as a lower level of expenditure than would otherwise have occurred, not as an absolute fall in health spending.

Medicines are one part of the solution for managing future pressure on Crown finances from rising healthcare costs and an ageing population, rather than a standalone solution.

If health system benefits are accrued through the provision of additional health services, this does not mean an absolute welfare reduction in benefits from medicines. However, it does change the nature of the benefits and how they are accounted for. To offset the additional health service delivery, the presenteeism benefit would need to be 19 percent higher than the uplift assumed in the core modelling.

The fiscal return depends on the type and phase-in of medicines funded

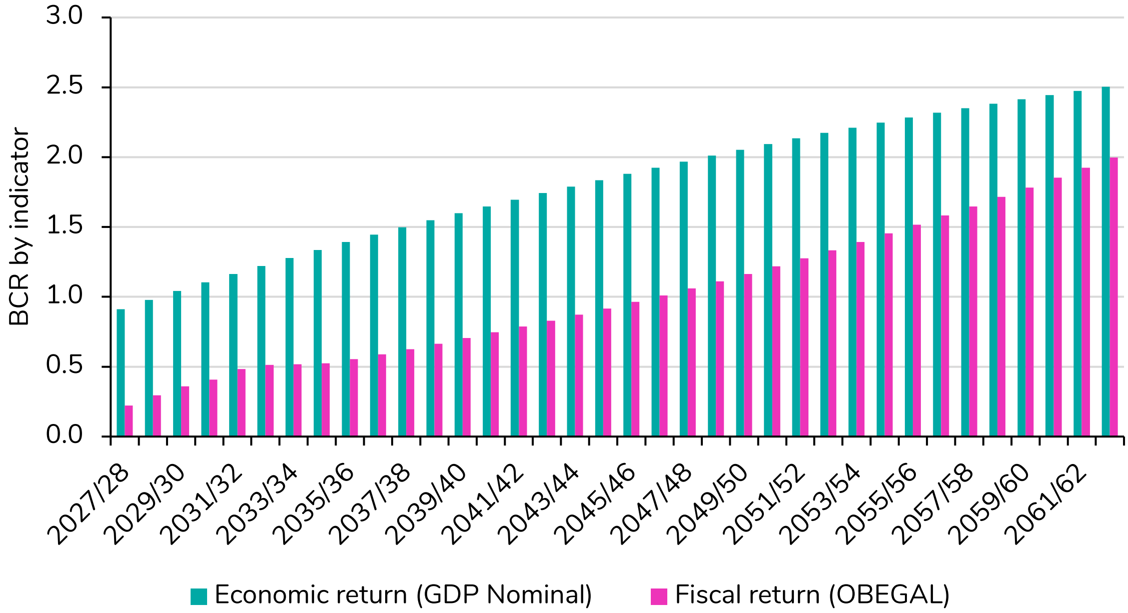
The modelling of the economic and fiscal returns is based on an impartial and general increase in the funding for medicines. The type and groups of medicines funded matter for the expected economic and fiscal benefits, particularly the nature of the benefits, their magnitude, prevalence, and timing.

The timing of returns differs between the economy and the Crown. The fiscal benefit-cost ratio reaches one later, after about 20 years, once higher tax revenue and slower growth in health spending have had enough time to offset the upfront increase in medicines funding.

Figure 5 shows the benefit-cost ratio from increased medicines funding over the next 35 years. The economic benefit-cost ratio is expected to reach one in year three (2029/30).

The fiscal benefit-cost ratio reaches one later, after about 20 years, once higher tax revenue and slower growth in health spending have had enough time to offset the upfront increase in medicines funding.

Figure 5 Timeline of benefit-cost ratio by indicator



Source: BERL analysis

Alongside the allocation of medicines across types, while the medicines funding increase in the modelling is assumed to happen in 2027 as a step-change, another possibility is a phase-in increase. Such a phase-in could be designed to maximise the speed, scale, and certainty of returns to both the economy and the government.

Contents

1 Introduction 7

1.1 Purpose and scope 7

1.2 Role and funding of medicines and vaccines in healthcare 7

1.3 New Zealand faces long-term fiscal pressure 7

2 New Zealand's comparative medicines funding gap 9

2.1 Increase in medicines funding 9

2.2 Allocation of medicines spending 9

3 Methodology 12

3.1 Cost-benefit analysis (CBA) approach 12

3.2 Theory of change and intervention logic 12

3.3 Modelling the increase in medicines funding 14

3.4 Core and wider benefits from medicines 16

3.5 Out-of-scope 18

3.6 Long-term Fiscal Model (LTFM) 19

3.7 Core assumptions 20

4 Cost-benefit analysis (CBA) structure 21

5 Labour force and productivity benefits 25

6 Healthy life expectancy 26

7 Carer benefits 31

8 Absenteeism 33

9 Presenteeism 38

10 Health system impact modelling 45

10.1 Health system benefits 45

10.2 Evidence of medicines impact on the health system 45

10.3 Modelling the effects of medicines using Treasury's Long-term Fiscal Model (LTFM) 46

11 Summary of modelling assumptions 50

12 Benefits 52

12.1 Economy 52

12.2 Health system and spending 52

12.3 Government and fiscal position 55

13 Cost-benefit analysis (CBA) 61

13.1 Net present value (NPV) 61

13.2 Benefit-cost ratio (BCR) 62

14 Wider benefits 64

14.1 Summary of wider benefits from medicines 64

14.2 Disability benefits 64

14.3 Unemployment benefits 65

15 Alternative health system benefits method 67

16 Benchmark 68

16.1 Healthy life expectancy 68

16.2 Ratio between absenteeism and presenteeism 70

16.3 Implied resolution of ill-health productivity cost 71

17 Discussion 73

17.1 Return on medicines funding and allocation across types 73

17.2 Phasing-in of medicines funding increases 74

18 Conclusion 75

Appendix A Summary of key literature findings 76

Appendix B References 82

Appendix C Literature review of health system benefits from medicines 88

Appendix D Health outcomes and economic benefits 90

Appendix E Estimation of affected population by condition 92

Tables

Table 1 Estimated health spending composition of New Zealand and OECD average 9
Table 2 Pharmac expenditure 2023/24........10
Table 3 Australian Government, PBS, 2024/25 11
Table 4 Current NZ coverage relative to the OECD, and assumed uplift in coverage, percent........16
Table 5 Scope and methodology by category of benefits 17
Table 6 Affected parties and gains and losses 22
Table 7 Costs and benefits – monetised and not monetised 23
Table 8 Estimated increase in labour force participation from the effect of medicines on HLE........28
Table 9 Average days absent per year by condition........34
Table 10 Estimation of the potential productivity effects of medicines on absenteeism 36
Table 11 Absenteeism shock design for LTFM, scaling on labour force and coverage........37
Table 12 Productivity losses due to presenteeism per employee per year by condition 39
Table 13 Literature evidence summary of the effect of medicines on presenteeism 42
Table 14 Presenteeism modelling – converting condition-level coverage changes into labour force effects 43
Table 15 Presenteeism final shock design, labour productivity growth 44
Table 16 Assumptions applied to the LTFM for reduction of health spending by group........49
Table 17 Summary of assumptions, shocks to the LTFM, and calculations 50
Table 18 Estimated change in health expenses, relative to baseline, percent........53
Table 19 Number of people receiving Supported Living Payment, by condition........65
Table 20 Number of people receiving Jobseeker Support, by condition........66
Table 21 Medicines benefit as a percentage of GDP (Net present value, 35 years)........71
Table 22 Estimated share of medicines benefit of ill health productivity cost........72
Table 23 Indicative return profile of medicines by benefit pathway 74
Table 24 Effects of conditions on absenteeism and associated medicines effect........77
Table 25 Effects of conditions on presenteeism and associated medicines effect 79
Table 26 Literature review summary – Health system benefits from medicines........88
Table 27 Literature summary on health outcomes and economic benefits from medicines 90
Table 28 Estimation of affected population by condition and as a percentage of the labour force.....92

Figures

Figure 1 Benefit-cost ratio (BCR) ii
Figure 2 Wider economic returns (benefit-cost ratio) from increasing medicines funding ii
Figure 3 Net present value of costs and benefits of increasing medicines funding – from 2027 to 2062, relative to the status quo iii
Figure 4 Health expenditure in status quo and higher medicines funding scenarios iv
Figure 5 Timeline of benefit-cost ratio by indicator vi
Figure 6 Treasury LTFS health expenditure under alternative cost assumptions 8
Figure 7 Theory of change and intervention logic 13
Figure 8 Share of health expenditure modelling 14
Figure 9 Health expenditure – medicines funding increase scenario 14
Figure 10 Medicines funding, status quo and increase in funding 15
Figure 11 Types of economic and social benefits 16
Figure 12 Share of life lived in good health, by share of health expenditure allocated to pharmaceuticals 27
Figure 13 Labour force participation rate for 15 to 60-year-olds (Quality-of-life shock), average 2017-2062 29
Figure 14 Labour force participation rate for over 60-year-olds (Longevity shock), average 2017-2062 30
Figure 15 Unpaid carers (percentage of population) comparing OECD countries and New Zealand 31
Figure 16 Health expenditure costs shares (weights across lifetime) by age 47
Figure 17 Economic benefits (nominal GDP) by labour productivity benefit, relative to the status quo 52
Figure 18 Reduction in health system expenses, relative to the status quo (excluding medicines funding increase), percent 53
Figure 19 Estimated reduction in health expenditure relative to baseline, excluding medicines funding increase 54
Figure 20 Health expenditure in status quo and higher medicines funding scenarios 55
Figure 21 Core Crown revenue by labour productivity benefit, relative to the status quo 56
Figure 22 Total Crown expenses, relative to the status quo 57
Figure 23 Fiscal benefits (OBEGAL) as a percentage of the economy (nominal GDP), status quo, and benefits from medicines funding 58
Figure 24 Fiscal (OBEGAL) benefits, relative to the status quo 59
Figure 25 Net debt path by scenarios 60
Figure 26 Net present value out to 2062, relative to the status quo 61
Figure 27 Composition of benefits from the effects of medicines 62

Figure 28 Benefit-cost ratio (BCR) 63
Figure 29 Timeline of benefit-cost ratio (BCR) 63
Figure 30 Benefit-cost ratio of the wider economic benefits from increasing medicines funding 64
Figure 31 Presenteeism benefits required without health system fiscal savings 67
Figure 32 Labour force participation, 65 years or more, percent 69
Figure 33 Benchmarking labour productivity benefits for nominal GDP 70

1 Introduction

1.1 Purpose and scope

The purpose of this report, which was commissioned by BusinessNZ and prepared by Business and Economic Research Limited (BERL), is to test whether increased public funding for medicines should be understood not only as a health measure but also as a potential fiscal and economic investment.

It assesses whether lifting New Zealand's medicines funding, including for vaccines, as a share of health expenditure equal to that of the OECD average could generate returns to government through higher labour productivity, greater labour force participation, higher tax revenue, and reduced pressure on parts of the health system.

We use a cost-benefit analysis (CBA) framework and Treasury's Long-term Fiscal Model (LTFM) to compare the upfront cost of additional medicines funding against monetised benefits such as higher GDP, increased tax revenue, reduced absenteeism and presenteeism, higher labour force participation, and potential health system savings from avoided downstream care.

Our analysis and assumptions are underpinned by an extensive review of the relevant literature (see Appendix A, Appendix C and Appendix D).

1.2 Role and funding of medicines and vaccines in healthcare

Medicines and vaccines are a core part of a modern health system. They prevent disease, treat and manage illness, reduce hospitalisations, and increasingly can transform or even cure diseases that were previously life-limiting or required lifelong care. Continued innovation means that medicines are becoming an increasingly important way to improve health, while reducing demand for more intensive and costly healthcare.

When effective medicines are not available, disease progresses and pressure shifts elsewhere to hospitals, specialists, patients, families, and employers. Patients may pay privately, fundraise, sell assets, or travel overseas to access treatments available in comparable countries. Limited access to modern treatments can also make New Zealand a less attractive place for clinicians to practise.

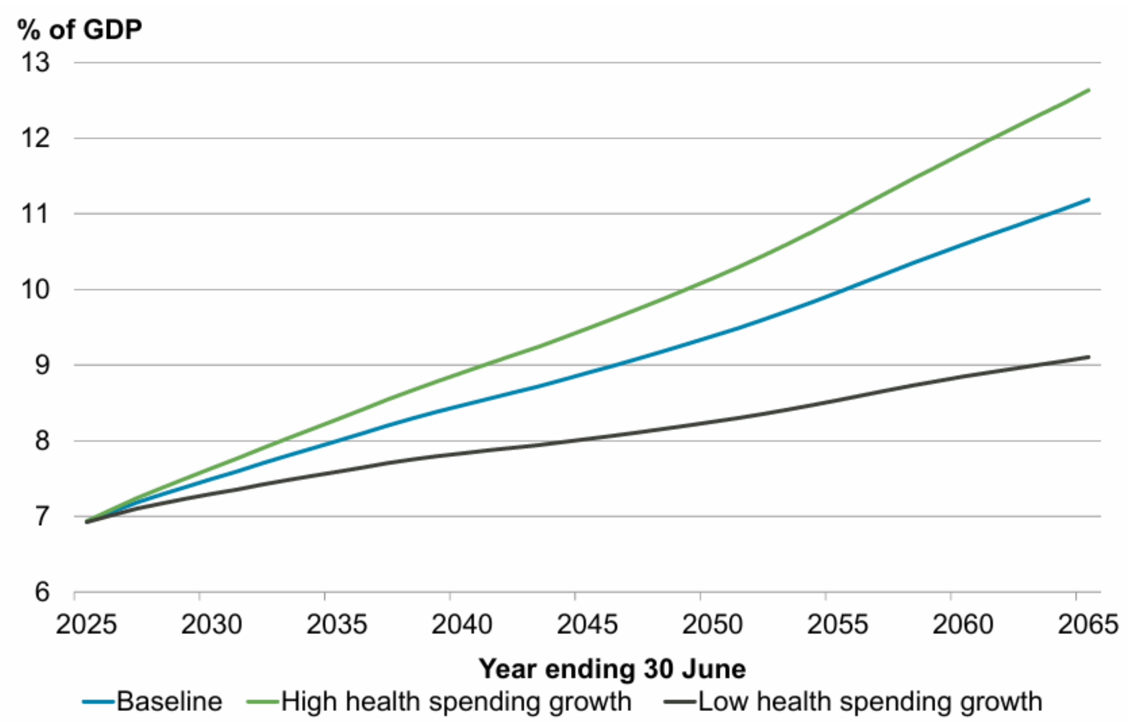
1.3 New Zealand faces long-term fiscal pressure

New Zealand faces fiscal pressure over the medium- and long-term. Treasury's Long-term Fiscal Statement (LTFS) identifies that these pressures are structural. In particular, the combination of the ageing population, slower growth in the working-age population, rising public health costs, and the cost of New Zealand Superannuation will place sustained pressure on the Crown operating balance.

The health expenditure pressure identified in the LTFS is directly relevant to the case for medicines funding. Health expenditure is projected to rise from around seven percent of GDP currently to around 11 percent of GDP by 2065 (Treasury, 2025).

Increased medicines funding, and improved health prevention, efficiency, and productivity, and some increases in user pays, could limit this increase (Treasury, 2025). The Treasury models a scenario that assumes 0.5 percent per annum less cost growth, than the baseline scenario, would limit health expenditure to nine percent of GDP in 2065 (Treasury, 2025).

Figure 6 Treasury LTFS health expenditure under alternative cost assumptions



Source: The Treasury

This scenario highlights that relatively small differences in annual cost growth can make significant cumulative difference over the long-term. Therefore, delaying action could be costly.

Early action allows fiscal pressures to be addressed gradually, spreads transition costs more evenly across generations, and reduces the likelihood that future governments will need to make sharper choices (Treasury, 2025).

2 New Zealand's comparative medicines funding gap

2.1 Increase in medicines funding

NZIER (2025) estimated that New Zealand's pharmaceutical expenditure as a share of total health expenditure was 4.9 percent, compared to the OECD average of 13.3 percent. As shown in Table 1, this is largely explained by a higher level of health spending (70.3 percent) directed to the delivery of broader health services, which exceeds the OECD average (61.4 percent).

> To match the OECD average in 2025, an estimated additional $2.7 billion in spending would have been required.[1]

Table 1 Estimated health spending composition of New Zealand and OECD average

Health spending composition (%)	New Zealand	OECD average	Difference
Delivery of health services	70.3	61.4	8.9
Total pharmaceutical expenditure	4.9	13.3	-8.4
Long-term residential and home care	14.4	16.1	-1.7
Other health expenditure	10.4	9.2	1.2

Source: NZIER (2025)

2.2 Allocation of medicines spending

Increasing medicines funding would improve access to medicines by enabling additional treatments to be funded and/or by expanding access to existing treatments. The way the funding was allocated would determine which patients benefitted, and the health outcomes achieved.

New Zealand's existing allocation of medicines expenditure

Table 2 presents Pharmac's expenditure across therapeutic groups. The table highlights that the expenditure is concentrated in a relatively small number of therapeutic groups, with the largest spending categories focused on complex, high-cost, and often long-term conditions.

[1] Using other available OECD data, we triangulated a similar assessment of the gap between New Zealand and the OECD average using health as a share of GDP. This resulted in a broadly consistent estimate with the implied NZIER increase in funding at $2.3 billion.

Table 2 Pharmac expenditure 2023/24

Therapeutic group	Gross ($m)	Main indications
Immunosuppressants	440	Autoimmune diseases, inflammatory arthritis, cancer
Diabetes	173	Types one and two diabetes
Chemotherapeutic agents	158	Cancer
Mucolytics	130	Cystic fibrosis
Antifibrinolytics and haemostatics	91	Haemophilia
Inhaled long-acting beta agonists	76	Asthma, COPD
Antithrombotic agents	57	Cardiovascular disease, stroke prevention
Multiple sclerosis treatments	53	Multiple sclerosis
Agents affecting the renin-angiotensin system	50	Hypertension, heart failure
Endocrine therapy	43	Cancer
Antipsychotics	42	Mental health
Anticholinergic agents	38	COPD, asthma
Antiretrovirals	35	HIV/AIDS
Diabetes management	35	Diabetes devices and management
Antiepileptics	31	Epilepsy, neuropathic pain
Oral and enteral feeds	30	Nutritional support
Analgesics	30	Pain management
Stimulants/ADHD Treatments	23	ADHD and narcolepsy
Total	**1,835**	**Total does not include vaccinations and antivirals (information suppressed)**

Source: Pharmac, Year in Review 2024

Pharmac is responsible for deciding which medicines to fund within a fixed annual medicines budget. As the number of potential funding opportunities exceeds available resources, medicines must be prioritised and assessed against a range of factors before funding decisions are made. Consequently, some medicines that have been assessed and prioritised remain unfunded on Pharmac's Options for Investment (OFI) list until sufficient budget becomes available.

In a report prepared for Medicines New Zealand, HealthNZ (2026) identified that, as of March 2026, there were 134 applications on the OFI list.

> Of these applications, the average length of time they remained on Pharmac's OFI list was 6.5 years and 83 percent were standard of care in other countries.

Furthermore, New Zealand has ranked lowest in the OECD by share of new medicines subsidised, with seven percent of new medicines subsidised by government and compulsory schemes between 2012 and 2021 in New Zealand, compared to the OECD average of 29 percent (NZIER, 2025).

Comparison to medicines funding in Australia

NZIER (2025) estimated that 12.2 percent of Australia's health expenditure was allocated to pharmaceuticals.

Australia funds subsidised medicines through the Pharmaceutical Benefits Scheme (PBS), a nationally administered programme that provides public funding for approved medicines. Medicines recommended for funding are listed on the PBS, enabling Australians to access a broad range of subsidised treatments through community pharmacies and hospitals.

Table 3 summarises the Australian Government's PBS spending by therapeutic category in 2024/25. At a high level, it shows that Australian medicines funding is heavily concentrated in a small number of categories, with a total government cost of AUD$19.1 billion.

The largest category is antineoplastic and immunomodulating agents, at AUD$8.1 billion or 43 percent of the total PBS. This indicates that cancer, immunology, and related high-cost specialised medicines account for a very large share of public medicines expenditure in Australia.

Table 3 Australian Government, PBS, 2024/25

Government cost, 2024/25	Cost (AUD $m)	Share (%)
Antineoplastic and immunomodulating agents	8,103	43
Nervous system	1,894	10
Alimentary tract and metabolism	1,607	8
Cardiovascular system	1,325	7
Antiinfectives for systemic use	1,150	6
Respiratory system	1,385	7
Sensory organs	828	4
Musculo-skeletal system	735	4
Blood & blood forming organs	912	5
Dermatologicals	522	3
Genito urinary system and sex hormones	359	2
Systemic hormonal preps (excl. sex hormones and insulins)	172	1
Various	59	0
Antiparasitic products, insecticides, repellents	7	0
Unless otherwise classified	4	0
Total	**19,061**	

Source: PBS

3 Methodology

3.1 Cost-benefit analysis (CBA) approach

We use a cost-benefit methodology to compare the upfront cost of additional medicines funding against the expected economic and fiscal benefits over time. The approach is to estimate the plausible order of magnitude for the economic and fiscal benefits that could arise if New Zealand increased health funding and allocated that funding toward medicines. This report does not prescribe the exact medicines that would be funded, the sequence of individual funding decisions, or the precise access criteria that would apply.

3.2 Theory of change and intervention logic

Theory of change from medicines

Medicines generate economic and fiscal benefits by improving health outcomes, which in turn increase workforce participation, reduce absenteeism and presenteeism, and enhance labour productivity. Better disease prevention and management can reduce the demand for costly healthcare services, including hospital admissions and long-term care.

These health improvements contribute to higher employment, increased economic output, and greater household incomes, while also strengthening government finances through higher tax revenues and reduced expenditure on healthcare, disability support, and income assistance.

Consequently, investment in effective medicines can be viewed not only as a health intervention but also as an investment in human capital, productivity, and long-term fiscal sustainability. From a cost-benefit analysis perspective, investment in medicines can be conceptualised as an investment in human capital which provides economy-wide returns, including to Crown finances. The resulting economic, social, and fiscal benefits provide the basis for assessing the value generated by additional pharmaceutical investment.

Intervention logic for medicines

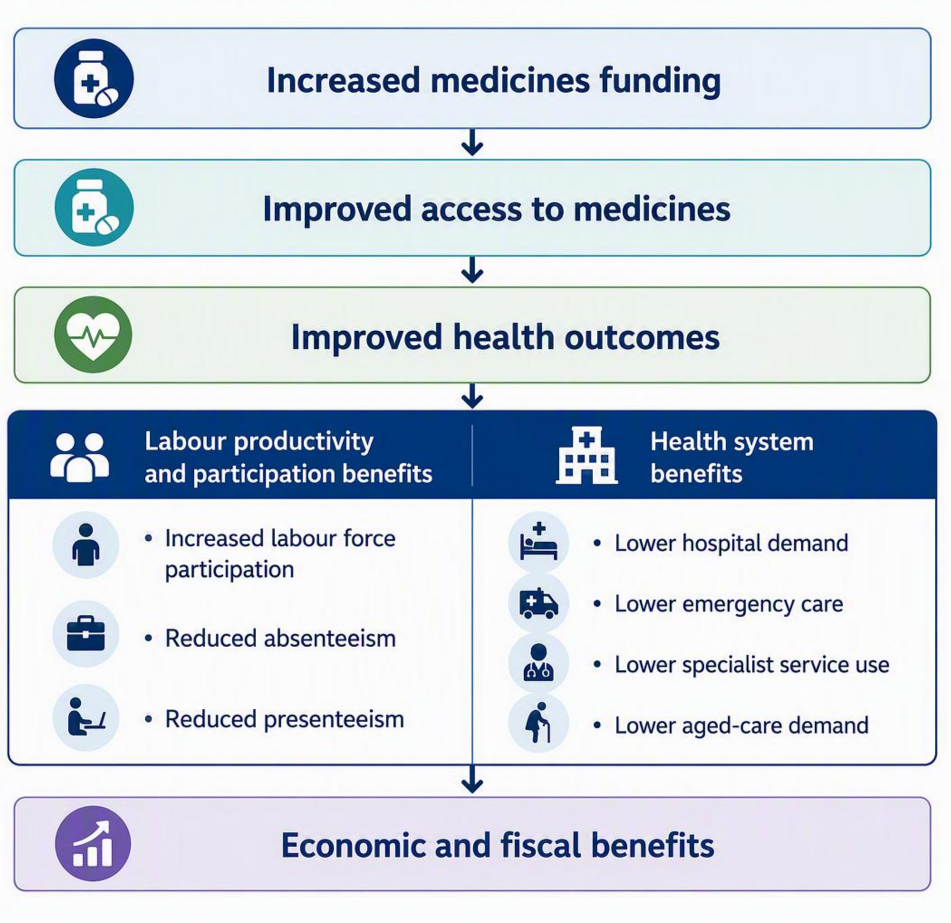
Figure 7 presents the intervention logic adopted in the analysis. The increase in medicines funding is expected to affect outcomes through a sequence of linked mechanisms.

The first step is the direct input of higher public investment in medicines. Improved access to, uptake of, and adherence to effective treatments result in better health outcomes. These include improved chronic disease management, fewer avoidable complications, better mental health, and more years lived in good health. The core argument is that medicines can "pay for themselves" through two main channels:

1. Improved access to medicines may increase effective labour input by supporting higher labour force participation and reducing both absenteeism and presenteeism. These labour market gains lift economic growth and taxable income, which flow through to higher Crown revenue.

2. More effective treatments, and adherence to them, may reduce avoidable downstream health costs by lowering demand for hospitals, emergency care, specialist interventions, residential care, and other higher-cost services.

Figure 7 Theory of change and intervention logic



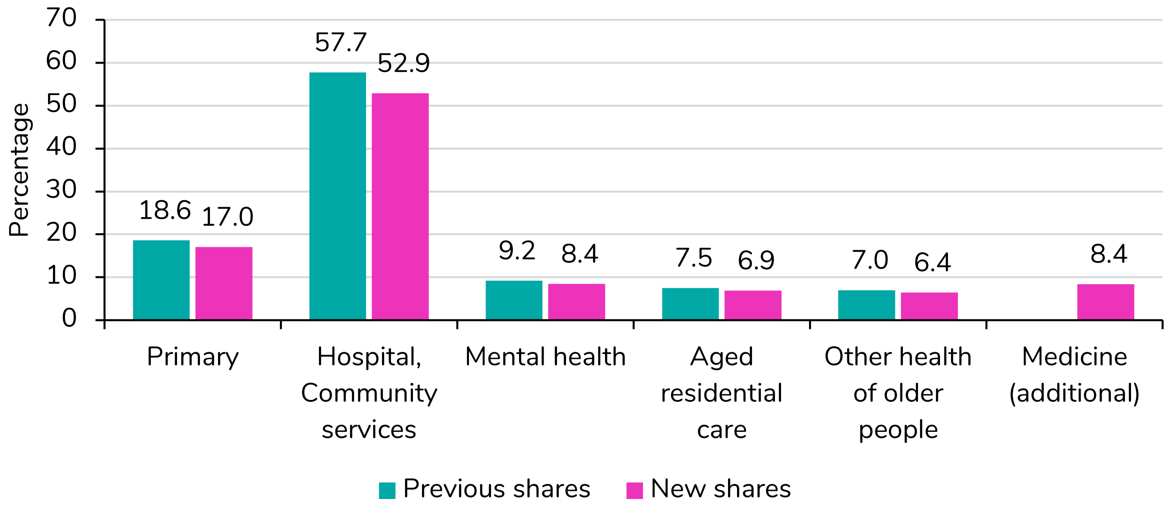
Source: BERL

The resulting increase in effective labour input supports higher GDP and higher tax revenue, while improved disease management reduces pressure on parts of the health system. An increase in medicines funding is linked to fiscal outcomes through an increase in government revenue (e.g., taxes) and expenditure offsets (e.g., less demand on the health system).

3.3 Modelling the increase in medicines funding

To meet the OECD average for pharmaceutical expenditure as a share of overall health expenditure, New Zealand will have to raise the medicines funding proportion by 8.4 percentage points (see difference in Table 1). Figure 8 presents how health expenditure is allocated under the increased medicines funding scenario with an immediate increase in fiscal year 2027/28.

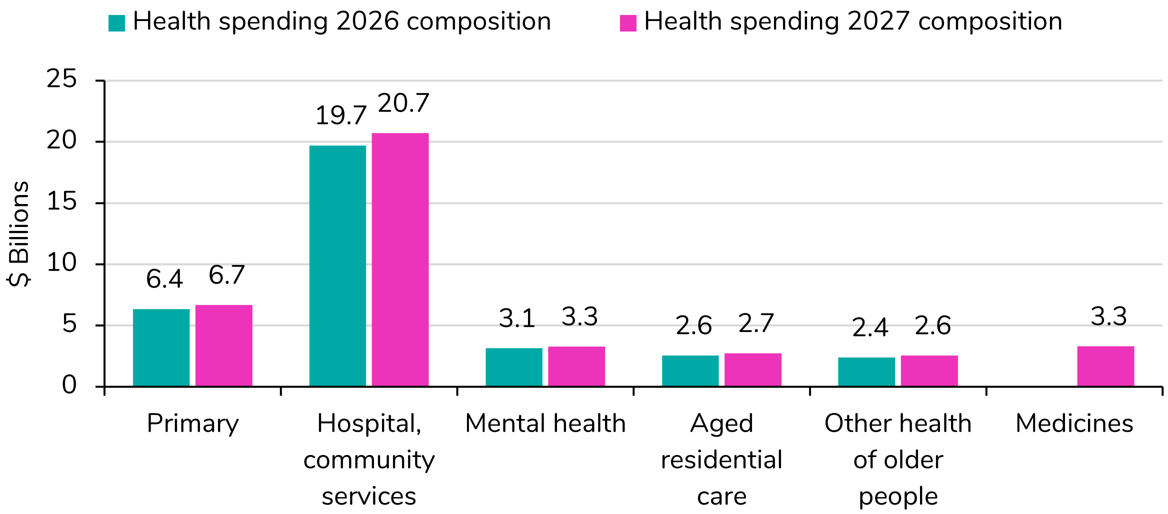
Figure 8 Share of health expenditure modelling



Source: BERL analysis using Treasury LTFM

Figure 9 summarises the health expenditure modelling used to translate medicines funding into the fiscal model.

Figure 9 Health expenditure – medicines funding increase scenario

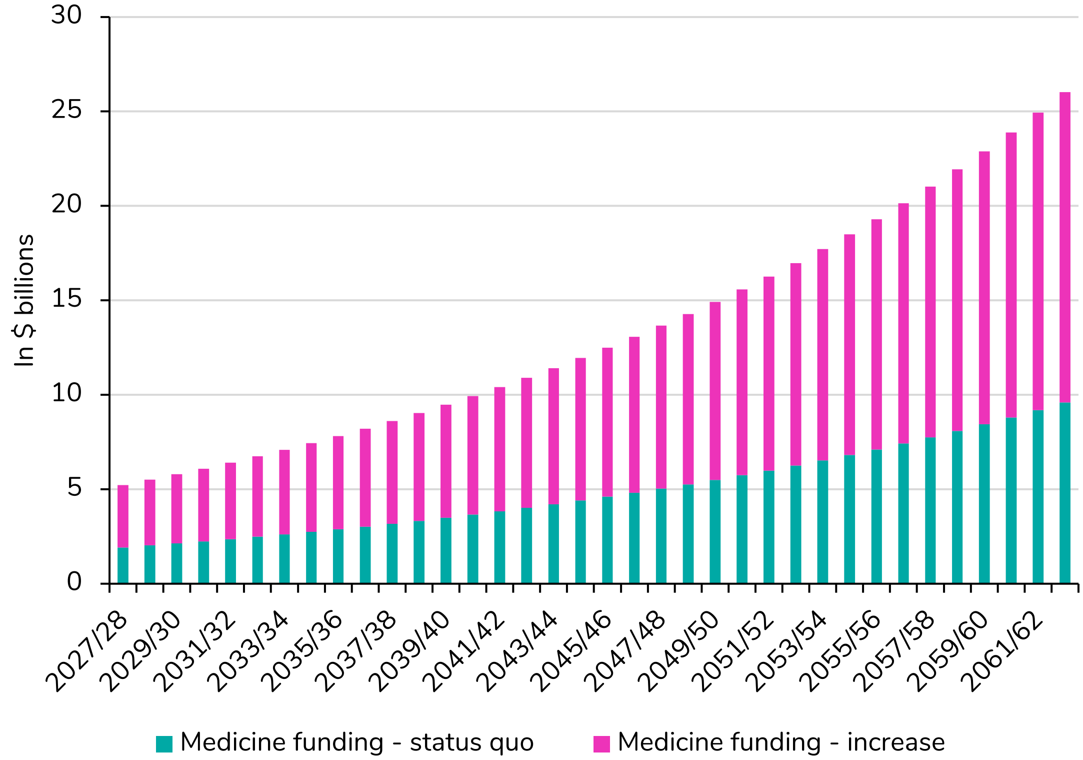


Source: BERL analysis using Treasury LTFM

3.3.1 Medicines funding increase over the projection period

Figure 10 shows the increase in medicines funding, including vaccines, that is used as the cost input for the modelling. In 2027, total medicines funding is assumed to increase to over $5 billion, with an additional $3.3 billion over and above the status quo. Medicines funding is 13.3 percent of health expenditure throughout the projection period.

Figure 10 Medicines funding, status quo and increase in funding



Source: BERL analysis

Table 4 shows the assumed coverage by condition, and the assumed increase, to match the OECD benchmark used for modelling. The assumed uplift in coverage for common conditions is by a third or 33 percent overall.

Table 4 Current NZ coverage relative to the OECD, and assumed uplift in coverage, percent

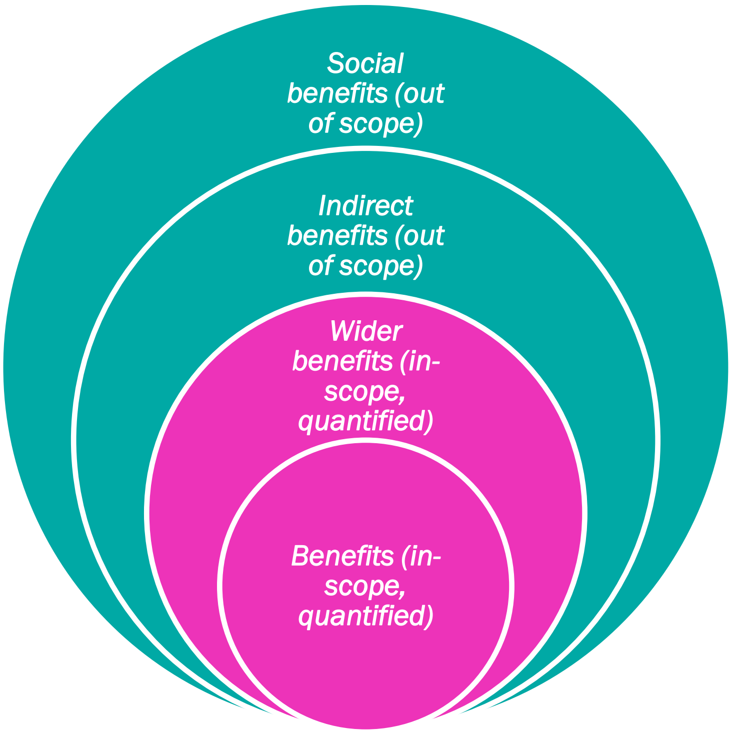
Condition group	Current NZ coverage relative to OECD	OECD benchmark	Increase in coverage
Hypertension / cardiovascular disease	80	100	20
Diabetes	66	100	34
Asthma / COPD	75	100	25
Common mental health conditions	70	100	30
Autoimmune diseases	40	100	60
Cancer medicines	30	100	70
Rare disease medicines	20	100	80

Source: BERL

3.4 Core and wider benefits from medicines

The estimated benefits from medicines are conservative. The direct economic and fiscal benefits of medicines are the focus of this assessment, rather than a full social cost-benefit analysis. As shown in Figure 11, the modelling of core benefits does not monetise the full social value of better health, and excludes wider indirect economic effects that may arise through second-round economic activity.

Figure 11 Types of economic and social benefits



Source: BERL analysis

Table 5 summarises the scope and methodology across the category and effects. The core benefits are the direct economic and fiscal effects included in the central modelling. These direct effects are improved healthy life expectancy and labour force participation, and reduced absenteeism and presenteeism. These benefits are monetised and quantified with a relative degree of certainty.

Wider benefits include the reduced informal caregiving burden and increased labour force participation by carers, as well as lower disability and unemployment-related welfare payments. The direction of these effects is supported by general evidence, but the available literature is not sufficient to estimate precise macroeconomic impacts. The estimates of these benefits is less certain and therefore they should be treated as indicative results.

Table 5 Scope and methodology by category of benefits

Category	Effects	Benefits	Modelling treatment
Benefits	Direct labour-market and fiscal effects from improved health, increased effective labour input, and reduced productivity losses.	Improved healthy life expectancy and labour force participation, reduced absenteeism, reduced presenteeism, and reduced informal caregiving burden (increased labour force participation by carers).	Monetised in the core modelling, based on review of the relevant literature. The precise magnitude of effects remains uncertain and depends on assumptions about uptake, adherence, and the mix of medicines funded.
Wider benefits	Additional labour market and fiscal impacts that may arise when better health reduces dependence on income support.	Reduced disability-related and unemployment-related welfare payments.	Benefits estimated based on indicative scenarios rather than being included in the central estimate. The direction of effect is supported by evidence, but the literature is more limited for reliably estimating macro-level effects.

Indirect economic benefits	Second-round economic effects from the labour productivity and participation gains flow through the wider economy.	Flow-on effects, inter-industry effects, induced effects from higher incomes, consumption, and business activity.	Excluded from the core modelling. Estimating broader economic impact requires further modelling. Their exclusion means the quantified results do not capture macroeconomic spillovers.
Social benefits	Wider welfare and well-being gains from better health outcomes.	Improved health status, longer and better-quality life, reduced symptoms, improved quality of life, equity benefits.	Not monetised in the core fiscal and productivity modelling. Estimating those benefits would require a welfare and health economic approach to estimate robustly.

Source: BERL analysis

The final two categories, indirect economic benefits and social benefits, are outside the scope of this study. Indirect benefits refer to flow-on, inter-industry, and induced effects that arise from the effects of higher incomes, productivity, and participation circulating through the wider economy. Social benefits include improved health, quality of life, reduced symptoms, and equity and/or access gains. These impacts are not monetised. Hence, the core and wider benefits quantified should be understood as conservative relative to the total welfare impact from medicines on the economy and society.

3.5 Out-of-scope

This study is deliberately focused on the direct economic and fiscal benefits of increased medicines funding. Estimating both the social benefits and the indirect economic benefits, such as through computable general equilibrium (CGE) modelling, is out of scope.

- Social benefits of good health – The core modelling is focused on the Crown fiscal return and does not attempt to value the full social return from improved health, including an increase in the number of quality-adjusted life years (QALYs), reduced pain and symptoms, longer healthy lives, improved well-being, or equity gains from improved access to treatment.

- Indirect economic benefits (CGE modelling) – These represent the secondary-round economic impacts resulting from *direct* economic benefits. This includes, for example, the increased spending and consumption, from the initial lift in labour force participation, that would then flow on to retail industries and ultimately to a second-round of higher tax revenue.

The benefits and returns estimated are, therefore, conservative both in economic and welfare terms, as the estimate captures only a subset of the benefits that could arise from increased medicines funding. The core modelling is focused on the Crown fiscal return and does not attempt to value the full social return from better health.

For these reasons, the results should be interpreted as an estimate of the direct fiscal and labour-market benefits. If wider health, well-being, caregiver, equity, and economy-wide spillover benefits were included, the total benefit case would be larger than the central fiscal estimate.

3.6 Long-term Fiscal Model (LTFM)

To model the economic and fiscal benefits we use Treasury's Long-term Fiscal Model (LTFM). The LTFM is a model developed by the Treasury to assess the long-term sustainability of New Zealand's public finances.

The LTFM combines demographic, macroeconomic, revenue, and expenditure assumptions to estimate how the Crown's fiscal position may evolve over time under current policy settings or alternative scenarios. The model allows the assessment of long-run fiscal pressures, such as the ageing population and rising health expenditure, because it links changes in labour force participation, productivity, GDP, government revenue, expenditure, the operating balance, and debt.

We have used the LTFM as a consistent and structured framework to test how improved medicines funding could generate fiscal benefits through higher effective labour input, increased tax revenue, and potentially lower growth in some areas of health expenditure.

We have adapted Treasury's LTFM to ensure its effectiveness for our work. The key changes include:

- Bringing forward the projection period by two years, so that it starts from the year 2027-28. The original LTFM and projections have long-run assumptions starting from 2030. As a result of this change, the status quo projection figures differ slightly from the publicly available figures reported by Treasury in its central Long-term Fiscal Statement (LTFS) projections. For this study, the difference relative to the status quo is largely reported, as the benefit from medicines is the focus.

- Crown expenditures that increase in line with nominal GDP are assumed to increase with status quo GDP growth over the projection horizon. This is instead of assuming nominal GDP increases in line with the productivity benefits arising from the increased funding for medicines (because labour productivity benefits from increased medicines funding would grow the economy).
- Assuming that the benefits from increased medicines funding, particularly labour productivity benefits, arise from year one and, therefore, not assuming that long-run productivity benefits from the increased funding are reached within a few years, as premised in the original LTFM.

3.7 Core assumptions

There is a set of assumptions that underpin parts of our modelling. For transparency and clarity, we have listed them upfront here:

- An increase in medicines funding is assumed to result in greater access to medicines, and better adherence to effective treatments, across the New Zealand population.
- The increase in medicines funding required to match the OECD average is modelled as occurring in a single year, 2027, rather than being phased in over time.
- Labour productivity benefits that result from the increased funding of, and access to, medicines take place immediately in the first year of our modelled period, 2027.
- Our modelling approach does not allow distinguishing precisely the delineation between the benefits from higher healthy life expectancy, and those from reduced absenteeism and presenteeism. We assume healthy life expectancy benefits are accrued in the form of labour force participation largely in later life.
- As per Treasury guidance, the discount rate used for the cost-benefit analysis is two percent.

4 Cost-benefit analysis (CBA) structure

We applied a cost-benefit analysis (CBA) approach to understanding the fiscal and productivity effects of increased government spending on medicines. At its core, a CBA measures the future benefits and costs of a policy against other alternatives and reduces them to a single measure. This enables a comparison to be made between the alternatives and ultimately provides evidence to inform decision makers. Our methodology will utilise the established Treasury framework for conducting CBAs – Guide to Social Cost Benefit Analysis (2015). The recommended five-step process is as follows:

1. Define the counterfactual that the current scenario will be assessed against
2. Identify the affected parties' gains and losses
3. Identify the costs and benefits
4. Value the costs and benefits
5. Discount to present value and then compare costs and benefits.

This framework provides a best-practice step-by-step guide for undertaking a CBA and its implementation is advised for any policy requiring a decision.

4.1.1 Defining the counterfactual and the medicines scenario

The counterfactual

The counterfactual for this assessment is the currently projected path of public health expenditure under unchanged policy settings. Under this counterfactual, health spending is assumed to continue rising broadly in line with the long-run pressures already identified in New Zealand's fiscal projections. These include the ageing population, rising demand for health services, and workforce and input cost pressures.

Under this baseline, existing access constraints, slower uptake of newly funded medicines, and the current composition of spending across medicine types are assumed to continue. Therefore, this baseline provides the reference case against which any incremental labour productivity, participation, and fiscal effects from higher medicines funding can be measured. Treasury's long-term fiscal projections indicate that publicly funded health expenditure could rise materially as a share of GDP over coming decades.

The medicines scenario

The medicines scenario is an alternative medicines funding model in which medicines expenditure as a share of health expenditure matches the OECD average in 2027. This represents an estimated increase from 4.9 percent to 13.3 percent of total health expenditure (NZIER, 2025). The scenario assumes that the increase in funding would be broadly distributed across all medicine types.

The overarching purpose of the scenario is to assess the economic and fiscal trajectory that could be expected if New Zealand's health system provided greater access to medicines, consistent with the OECD average. The scenario assumes that the health system has sufficient capacity to implement and sustain the associated increase in medicines funding.

4.1.2 Identify the affected parties' gains and losses

Table 6 identifies the affected parties in the CBA and summarises where the gains and losses from increased medicines funding are expected to go.

Table 6 Affected parties and gains and losses

Parties	Main gains	Main losses (or costs)
Central government and Crown	Higher tax revenue from increased labour force participation, reduced absenteeism, reduced presenteeism, and higher GDP. Reductions in future health expenditure growth through avoided hospitalisations, emergency department (ED) use, residential care, and other downstream costs. Improved OBEGAL and debt path.	Fiscal cost of increased medicines funding.
Health system	Lower pressure on hospitals, EDs, specialist services, and some long-term care if medicines prevent deterioration and complications. Better disease management may allow more efficient use of scarce health workforce and capacity.	Short-term implementation pressure from expanded access, prescribing, monitoring, and follow-up.
Patients and people with health conditions	Improved access to medicines, better disease control, fewer complications, improved functional capacity, longer healthy working lives, and	Possible treatment burden, adherence requirements, side effects, or transition costs. Some benefits

	potentially lower out-of-pocket or non-funded medicine costs.	depend on diagnosis, eligibility, clinical uptake, and response to treatment.
Workers and employers	Fewer sick days, improved productivity while at work, and lower disruption from illness. Employers benefit from higher output and reduced replacement or temporary staffing costs.	
Informal caregivers and households	Reduced caregiving burden where better treatment improves patient independence or reduces acute episodes. Potentially higher household income if patients or caregivers remain in formal work for longer.	

Source: BERL analysis

4.1.3 Identify the costs and benefits

Table 7 summarises the full set of costs and benefits considered in the CBA, distinguishing between those that are monetised in the core modelling and those that are treated qualitatively.

Table 7 Costs and benefits – monetised and not monetised

Type	Costs and benefits	Monetised	Description
Cost	Additional public medicines funding	Yes	Direct fiscal expenditure required to expand medicines access. This is the primary intervention cost and reflects additional pharmaceutical investment funded by the Crown.
Cost	Implementation, prescribing, monitoring, and follow-up costs	No	Health sector resources required to administer expanded access, including clinical assessment, prescribing, monitoring, adherence support, and associated administrative activities.
Cost	Opportunity cost of public funding	No	Economic value of alternative uses of public funds that are forgone when government expenditure is directed towards medicines funding.

Benefit	Reduced absenteeism	Yes	Productivity gains from reducing illness-related absences from work, thereby increasing the number of days worked and effective labour input.
Benefit	Reduced presenteeism	Yes	Productivity gains through improved employee health and functioning, increasing productivity and work performance while at work.
Benefit	Higher labour force participation and delayed exit from work	Yes	Increase in labour supply from individuals entering, remaining in, or returning to employment, particularly those with chronic or disabling health conditions.
Benefit	Health system savings from avoided downstream care	Yes	Reduction in future healthcare expenditure through lower utilisation of hospitals, EDs, residential care, outpatient services, and other health resources.
Benefit	Reduced informal caregiving burden	Yes	Enabling caregivers to increase labour market participation, productivity, or other productive activities.
Benefit	Reduced welfare transfers	Yes – wider benefits	Reduction in government expenditure, as fewer transfer payments are required due to improved health outcomes.
Benefit	Improved patient health and quality of life	No	Improvement in individual well-being through better health status, physical functioning, mental well-being, and overall quality of life resulting from more effective treatment.
Benefit	Improved equity and access to treatment	No	Fairness and health outcomes are enhanced due to reducing barriers to medicine access, and addressing unmet needs across population groups.

Source: BERL analysis

5 Labour force and productivity benefits

Higher levels of health and social spending are associated with improvements in measures such as mortality, life expectancy, and disability-adjusted health outcomes (Park et al., 2025). These health outcomes can have important economic implications by supporting greater workforce participation and productivity.

Increased access to medicines contributes to these outcomes by improving the prevention, treatment, and management of disease. As health outcomes improve, individuals may be able to participate in the workforce for longer, experience fewer periods of illness-related absence, and be more productive while at work. We have explicitly modelled these three channels through which workforce and productivity effects are generated by improved access to medicines:

- Improved healthy life expectancy and increased labour force participation – Delayed exit from work (through disability and early retirement), especially relevant for chronic disease and seniors
- Reduced absenteeism – Fewer sick days per worker, particularly as a result of anti-infectives and vaccines, and medications for musculoskeletal diseases and mental health
- Reduced presenteeism – Improved on-the-job performance, especially for mental health, chronic disease, and migraines.

These outcomes are translated into the LTFM through targeted adjustments to effective labour input:

- Increased labour force participation for health-affected working age and older working-age cohorts (better healthy life expectancy)
- Increased average weekly hours worked (reduced absenteeism)
- Increased labour productivity (reduced presenteeism).

We provide an overview of literature reviewed in relation to each of the three channels, and our approach to modelling their effect, in the following sections.

6 Healthy life expectancy

Health influences an individual's ability to enter, remain in, and participate in the workforce.

Improvements in health may allow people to remain economically active for longer, while reducing the likelihood of leaving employment due to illness or disability. This factor is mainly measured as health life expectancy (HLE). It reflects the number of years a person can expect to live in good health, and is a measure of the overall burden of disease and injury in a population (World Health Organization (WHO), 2024).

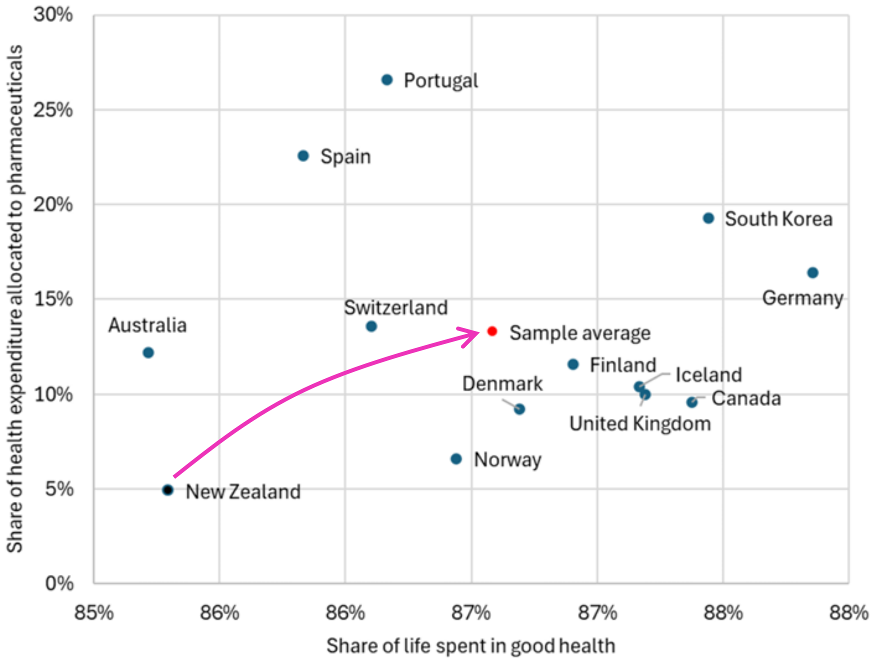
For many chronic conditions effective treatment can improve disease management, slow disease progression, and maintain functional capacity over time. Increased access to medicines can therefore contribute to longer periods of healthy life and support workforce participation among working-age individuals.

Healthy life expectancy is different to life expectancy (LE) as it discounts years lived in less than full health, due to disease or injury, rather than counting years until death. The gap between healthy life expectancy and life expectancy reflects the burden of non-fatal illness and disability.

New Zealand performs relatively well internationally in terms of life expectancy and, at around 82 years, is close to the OECD average. However, in terms of healthy life expectancy, New Zealand is below the OECD average.

This means that, while the average OECD population can expect to spend 87 percent of life in good health, New Zealanders may expect to spend only 85 percent of their lives in good health. Therefore, as illustrated in Figure 12, we assume that New Zealand shifts to the sample average, represented by the red dot.

Figure 12 Share of life lived in good health, by share of health expenditure allocated to pharmaceuticals



Source: NZIER (2025)

6.1.1 Modelling approach

Our modelling approach is based on the findings from NZIER (2025) and assumes that an increase in the share of health expenditure allocated to pharmaceuticals would translate into additional years of good health. From the sample of countries in NZIER's analysis, the average life expectancy (LE) at birth is 82.4 years, and the average healthy life expectancy (HLE) at birth is 71.3 years. New Zealand is slightly below the average LE at birth (82.3 years) and over a year below the HLE at birth (70.2 years) (NZIER, 2025).

Table 8 summarises the approach used in modelling the effect of medicines on HLE and labour force participation. Our simplifying assumption is that an increase in the HLE to LE ratio translates into an increase in participation in the labour force.

Based on the NZIER study, if New Zealand matched the OECD's healthy life expectancy to life expectancy ratio, labour force participation would increase by 1.23 percent. We separate the uplift in the HLE ratio into two shocks, a quality-of-life shock (to working age cohorts) and longevity shock (to senior cohorts). The assumed increase is respectively a 0.37 percent quality-of-life uplift and a 0.86 percent longevity uplift (assuming a 30/70 allocation across the two shocks). The resulting increase in labour force participation equals the quality of life and longevity uplifts adjusted for the labour force participation rates for their respective age cohorts.

Table 8 Estimated increase in labour force participation from the effect of medicines on HLE

	Life expectancy (LE)	Healthy life expectancy (HLE)	Healthy life expectancy to Life expectancy ratio (percent)
OECD	82.4	71.3	86.5
New Zealand	82.3	70.2	85.3
Difference	0.1	1.1	**1.23**
		Allocation (percent)	Labour force participation shock (percent increase)
Quality of life (15 to 60 years)		30	**0.37**
Longevity (60 years and over)		70	**0.86**

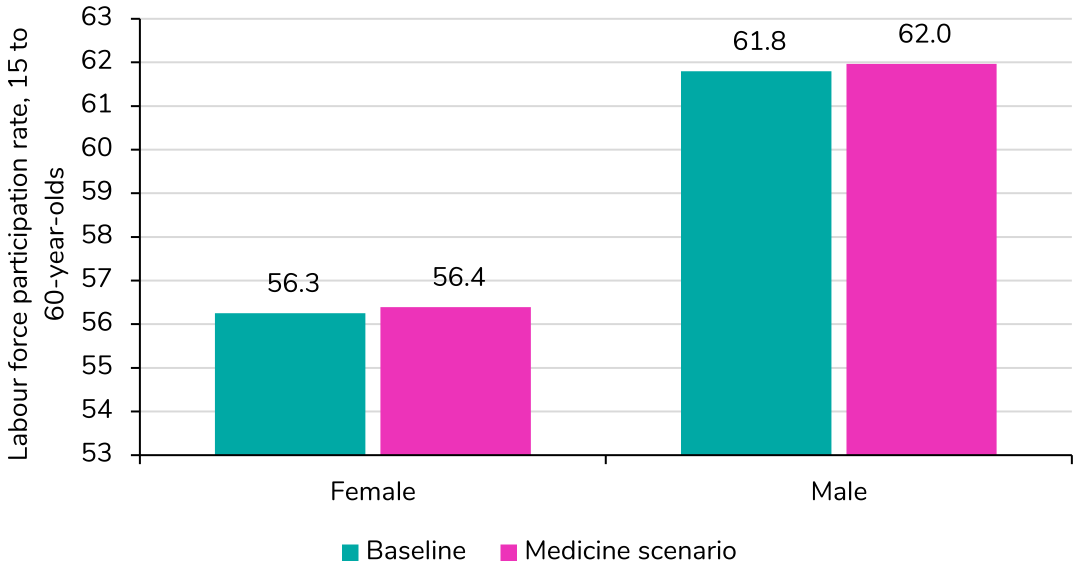
Source: BERL analysis

Quality of life shock

A quality-of-life shock represents the assumed increase in effective labour supply among working-age people because of an increase in medicines funding and access. This is achieved by improving health status and helping people remain attached to work.

Figure 13 presents the labour force participation (LFP) shock for the 15 to 60-year-old age group in our model. This is distinct to the over-60 years of age “longevity” channel that focuses on extending healthy working life at older ages.

Figure 13 Labour force participation rate for 15 to 60-year-olds (Quality-of-life shock), average 2017-2062



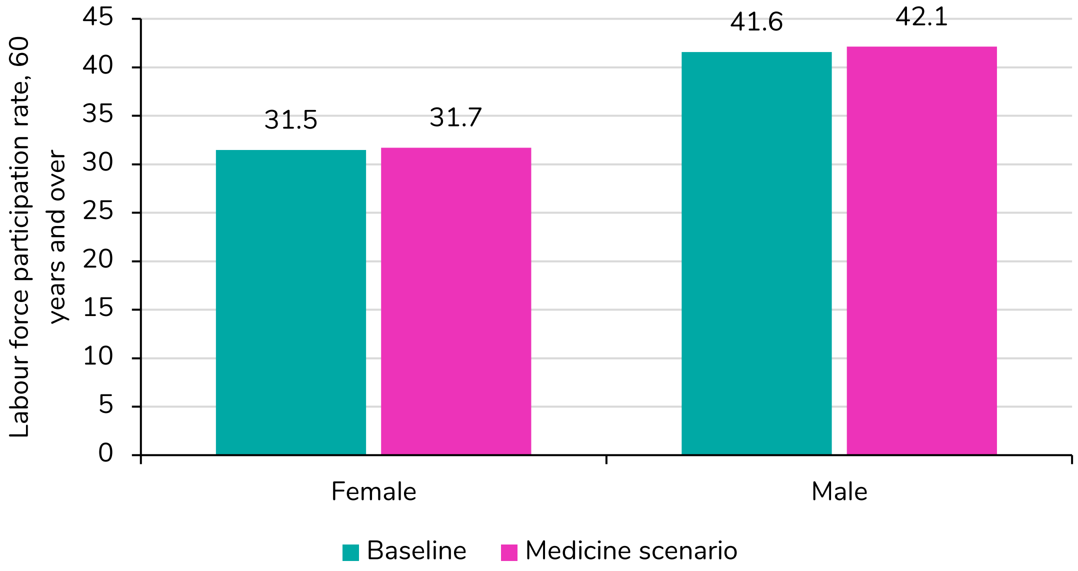
Source: BERL analysis using Treasury LTFM

Longevity shock

A longevity shock reflects the assumed increase in medicines access and its ability to support older workers to remain in the labour force for longer by improving HLE and delaying a health-related exit from work.

Figure 14 presents the labour force participation shock for individuals aged over 60 years in our model. This represents the longevity channel through which improved medicines access translates into greater labour force participation.

Figure 14 Labour force participation rate for over 60-year-olds (Longevity shock), average 2017-2062



Source: BERL analysis using Treasury LTFM

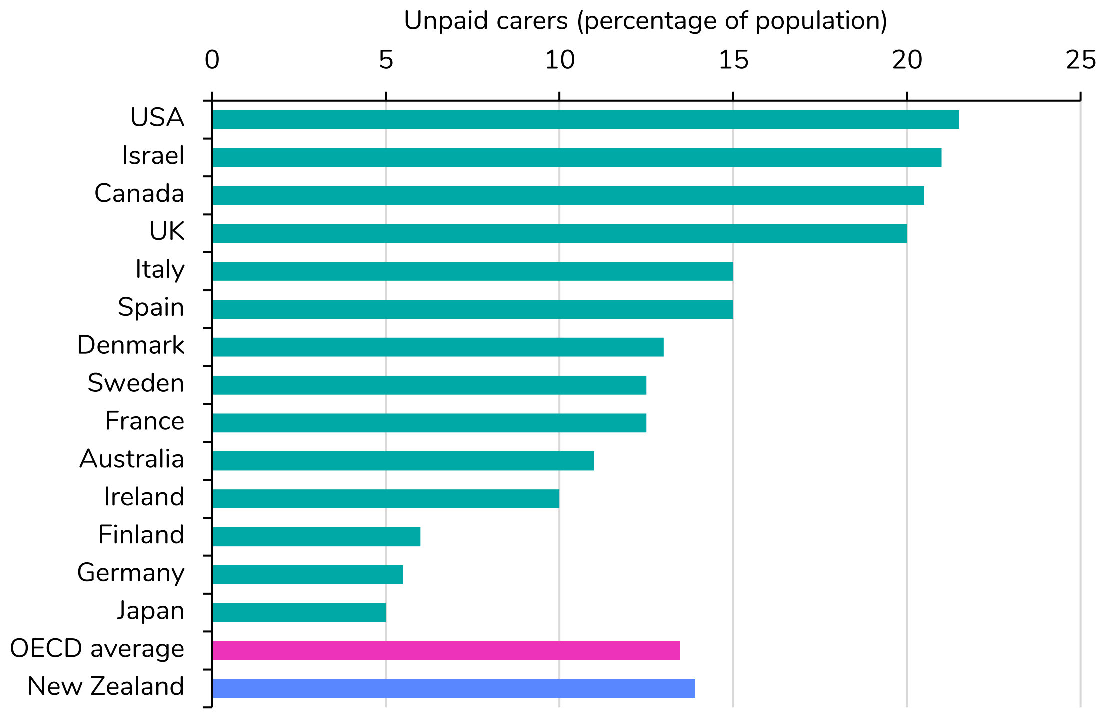
7 Carer benefits

Medicines can benefit not only the patient receiving treatment, but also the people who provide informal care. Where better access to medicines improves disease control, reduces acute episodes, slows deterioration, or increases patient independence, the time required from family and whānau carers may decrease.

The fiscal return would come through higher employment of carers who were previously outside the labour force, or working fewer hours because of care responsibilities. Evidence in the literature does suggest that medicines would have an effect on labour force participation and the working hours of carers, but the precise response is dependent on many factors which makes estimation challenging.

Figure 15 shows that unpaid care is a material part of the population across OECD countries, but that New Zealand is positioned relatively highly compared with many peer countries. Informal carers in New Zealand make up an estimated 13.9 percent of the population compared to an average of 13.5 percent across OECD countries.

Figure 15 Unpaid carers (percentage of population) comparing OECD countries and New Zealand



Source: Infometrics, International Alliance of Carer Organizations report 2021 Global State of Caring

Baker et al. (2021) provide a systematic review of literature as it relates to caregiver burden, separating out pharmaceutical-specific literature, and citing numerous relevant effect size and outcomes from different studies. Fridman et al. (2017) found that improved medication adherence in children and adolescents with ADHD was associated with significantly reduced caregiver burden.

Unpaid caregiving is not a marginal aspect of the benefits of medicines. A sizeable share of the population provides unpaid care, meaning health improvements that reduce care needs may have wider labour market and household effects beyond the patient directly receiving medicines.

The difference of 0.4 percent of New Zealand's population in informal carer roles, compared to the OECD average, represents approximately 19,000 informal carers. 32 percent of these carers, about 6,000, are not in the labour force. Therefore, meeting the OECD average represents an increase in the labour force of 0.2 percent.

The effect depends on which conditions receive additional medicines funding, the extent to which treatment reduces care needs, the age and work readiness of carers, availability of suitable employment, and whether carers are able to convert released time into paid work.

8 Absenteeism

Absenteeism is defined as not attending scheduled work or, more so, an employee's time away from work due to illness, injury, or disability. It is generally measured as missed working days annually or missed working hours weekly. In an economic sense, absence from work reduces available labour input and can impose costs on employers through lost productivity.

Many health-related, and particularly chronic, conditions are associated with higher rates of absenteeism. Individuals with such conditions are generally absent from work more often and this is compounded further by disease risk and additional diseases (Asay et al., 2016). Absenteeism and presenteeism are understood as two primary sources of lost productivity and as indirect costs to employers (Schultz et al., 2009). Costs from absenteeism generally exceed direct spending for common chronic conditions but are still second to the costs imposed by presenteeism.

Pharmacological treatment has been shown to reduce both absenteeism and, more consistently, on-the-job productivity loss (presenteeism). This result is particularly strong for several high-burden conditions.

8.1.1 Evidence base

Unlike presenteeism, absenteeism is generally easier to observe and quantify but the size of the effect still varies substantially by condition, severity, and measurement approach. There are some country-wide analyses of absenteeism and its cost, including for New Zealand, but they largely comprise condition-specific studies that use different instruments and capture different time periods or populations. This means care should be taken when examining different studies.

Furthermore, while there is a range of estimates on both absenteeism costs and rates by conditions, there is less available evidence on the extent to which pharmacological treatment may reduce absence from work.

In New Zealand, Southern Cross Health Insurance and BusinessNZ (2025) found that the average employee took 5.5 days of sick leave in 2022, which resulted in a total cost of $2.86 billion for employers.

Lynch et al. (2004) established an early synthesis of estimated productivity losses for ten common conditions using ranges of prevalence and associated absenteeism and presenteeism losses (Table 9). The authors found that the overall economic burden was highest for hypertension, heart disease, depression and other mental illnesses, and arthritis.

Table 9 Average days absent per year by condition

Condition	Average days per year absent
Allergy	8.2
Arthritis	5.9
Asthma	12
Any cancer	16.9
Depression, sadness, or mental illness	25.6
Diabetes	2
Heart disease	6.8
Hypertension	0.9
Migraine and headache	10.7
Respiratory disorders	14.7
Average loss	**10.4**

Source: Lynch et al., (2004)

Brouwer et al. (2023) found that absenteeism resulted in an average loss of 6.5 days over a four-week period, the equivalent of 48.7 working hours. Earlier estimates by Boles et al., (2004) found that in an average work week, 1.8 percent of employees were absent due to sickness. Asay et al. (2016) found that absenteeism estimates were between one to two days per individual per year but noted that this depended on the risk factor and chronic disease. Further, the authors explain that absenteeism increased with additional diseases reported. This is an important consideration, and additional variation can be found between males and females. Mullen and Renane (2017), citing Susser and Ziebarth (2016), show higher rates of both "absence and presenteeism among women".

Condition-specific literature on absenteeism identifies higher rates for mental health, respiratory and allergic conditions, musculoskeletal disorders such as arthritis and back pain, and other chronic conditions such as cancer and diabetes.

Mental health is consistently associated with higher rates of absenteeism (and presenteeism). This is evidenced in Table 9, and again by Mullen and Rennane (2017). Keech and Beardsworth (2008) identify a range of studies on influenza and its cost on individuals, employers, and society, confirming its significant impact on absenteeism and presenteeism. Kauppi et al., (2010) reach similar conclusions, finding that asthma and rhinitis increase the risk of days off work.

Effects of pharmaceuticals in reducing absenteeism

Despite extensive evidence on condition-specific absenteeism rates and costs, the literature available on the role of pharmaceuticals in reducing absenteeism is less mature at present, albeit there is a growing evidence base.

The most established study is by Burton et al., (2003), which surfaced literature confirming that pharmaceuticals reduce productivity losses across a range of conditions, including respiratory illnesses, diabetes, depression, dysmenorrhea, and migraine. However, in large part, the effect is greatest for presenteeism.

Lynch et al., (2004), citing Claxton et al. (1999), stated that "absenteeism increased in each of the six months before a depression diagnosis and then decreased in each of the six months after the onset of drug treatment for depression". A study by the Institute for Health and Productivity Management (2003) found that medical expenditure correlated with absenteeism and presenteeism for musculoskeletal, mental health, respiratory, and gastrointestinal health problems.

Importantly, underpinning many of these studies is acknowledgement that effect sizes vary, and some studies show modest or non-significant absenteeism effects.

Literature on the effects of absenteeism confirm that it is a sizeable cost to employers and society, albeit less than presenteeism (for reasons explained in more detail below). Furthermore, there is not enough evidence that suggests effective pharmacological treatment can reduce absence from work, particularly for mental health, respiratory diseases, migraines, and other health-related conditions. However, the variation in populations measured, methodologies, and conditions make it inherently hard to impose an aggregate variable within our modelling.

8.1.2 Modelling the effects of medicines on absenteeism

Table 10 summarises the literature review of the burden of absenteeism by condition, and the potential benefits from medicines in terms of labour productivity, measured in days lost per year.

Based on the literature, the categories are arranged as follows:

- Burden categories: Low (<3 days/yr equivalent) · Moderate (3–7 days/yr) · High (>7 days/yr)
- Pharma impact categories: Small (<20% relative reduction, or <1.5 days) · Moderate (20–40%, or 1.5–3 days) · Large (>40%, or >3 days)

For conditions for which there is a data gap, we assume moderate effects from medicines, as a central set of assumptions for the impact on absenteeism. The final column of Table 10 is the estimated potential productivity effects from medicines in reducing absenteeism.

Table 10 Estimation of the potential productivity effects of medicines on absenteeism

Condition	Burden category	Burden (days/year)	Absenteeism productivity cost (percent)	Medicines indicative effect	Medicines effect on absenteeism (days/year)	Medicines effect on absenteeism (percent)	Medicines productivity benefit (day/year, percent)
Mental health and depression	High	7	3.0	Moderate–Large	4.0	40	1.2
Asthma	High	7	3.0	Large	3.0	50	1.5
COPD	High	7	3.0	Moderate	2.0	30	0.9
Acute respiratory infection/influenza	High	7	3.0	Large	3.0	40	1.2
Migraine	High	7	3.0	Small	1.5	20	0.6
Arthritis	Moderate	5	2.2	Data gap			
Allergies/rhinitis	Moderate	5	2.2	Data gap			
IBS/bowel disorders	Moderate	5	2.2	Data gap			
Gout	Moderate	5	2.2	Data gap			
CVD (incl. heart failure)	Low–Moderate	3	1.3	Data gap			
Diabetes	Low	3	1.3	Large	3.0	40	0.5
Hypertension	Low	3	1.3	Moderate	3.0	30	0.4

Source: Various sources, BERL analysis

Table 11 summarises the final stage of the modelling of the absenteeism shock for the LTFM, which is the percentage increase in hours worked. For each condition, the productivity effect from medicines is scaled by the prevalence of each condition in the labour force, with the total potential productivity benefit from medicines on absenteeism a 0.57 percent increase.

The approach and calculations used to estimate the prevalence by condition in the labour force is summarised in table 26 in Appendix E. Finally, we scale the productivity benefits to the assumed increase in coverage of medicines from the increased funding. This is assumed to be by a third (33 percent) to match the OECD average coverage across conditions.

Table 11 Absenteeism shock design for LTFM, scaling on labour force and coverage

Conditions	Prevalence in labour force (percent)	Productivity effect (percent)	Aggregate potential productivity effect from medicines (percent)
Asthma	10	1.5	0.16
Hypertension	11	0.4	0.04
COPD	1	0.9	0.01
Heart failure	1	0.4	0.00
Cardiovascular disease (IHD)	3	0.4	0.01
Diabetes	4	0.5	0.02
Dyslipidaemia	7	0.7	0.05
Gout	3	0.7	0.02
Arthritis	14	0.7	0.09
Mental health	13	1.2	0.16
Measured total potential productivity benefit from medicines			**0.57**
Scaling productivity benefits for coverage increase (33%)			**0.19**

Source: BERL analysis

The long-run average weekly hours worked (i.e. hours per week) for the LTFM is 33.60 hours. An increase of 0.19 percent results in a lift, as a result of the effect of medicines on absenteeism, to 33.66 hours per week.

9 Presenteeism

Presenteeism is broadly understood as attending work while ill or otherwise impaired, for example, with an injury or other health-related condition (Johns, 2009). As a result, individuals may experience reduced productivity to varying extents.

This is most commonly measured as output per hour or effective hours. While less visible and more difficult to measure than absenteeism, presenteeism represents a significant source of productivity loss and is often the highest cost imposed by health conditions (Lynch et al., 2004).

Many chronic conditions affect concentration, energy levels, physical functioning, and overall work performance. This means that pharmaceuticals can have a significant effect on improving productivity while individuals remain in employment.

However, it is important to note that the share of productivity loss that is “addressable” depends on many factors, including baseline disease severity, treatment adherence, timing and duration of therapy, comorbidities, job type, and workplace policies, all of which vary across settings and populations.

9.1.1 Evidence base

The available literature is rich in condition-level presenteeism (i.e., how much output is lost with a given condition) but thinner on treatment-level presenteeism gains (i.e., the extent to which pharmacological treatment reduces presenteeism).

There are limited countries or economy-wide studies on the benefits to presenteeism from pharmaceuticals. Studies are often condition-specific, or sensitive to measurement instruments and methods, making generalising across them more difficult – this is outlined well by Garrow (2016). Furthermore, presenteeism is often measured with varying methods and so costs are rarely included consistently in full economic evaluations.

As with absenteeism, the impact of presenteeism varies substantially by health condition (Boles et al., 2004). Goetzel et al. (2004) synthesised data from multiple studies on selected conditions, finding that across ten prevalent conditions, presenteeism costs per employee per year were on average between 6.8 percent for heart disease to 20.5 percent for migraine (Table 12).

Table 12 Productivity losses due to presenteeism per employee per year by condition

Conditions	Average (%)
Allergy	10.9
Arthritis	11.2
Asthma	11
Any cancer	8.5
Depression, sadness, or mental illness	15.3
Diabetes	11.4
Heart disease	6.8
Hypertension	6.9
Migraine and headache	20.5
Respiratory disorders	17.2
Average loss	**12**

Source: Goetzal (2004)

Burton et al. (2004) showed the extent to which different conditions limit work output, with depression limiting output in 51.1 percent of people and cancer limiting output in 31.1 percent of people.

Schultz (2009) reviews available research in this field, including Goetzel et al. (2004), and averages the total costs (i.e., medical, pharmacy, absenteeism, and presenteeism) of health conditions attributed to presenteeism. Migraines and allergies were particularly costly health conditions for presenteeism, at 70 percent, while presenteeism from respiratory infection was a much smaller share of costs (14 percent). This is backed up by Schultz and Edington (2007) who find that allergies and arthritis are the most common conditions leading to presenteeism.

In Australia, a study prepared for Medibank (2011) found that “6.5 working days of productivity are lost per employee annually as a result of presenteeism” with depression, allergies, hypertension, and diabetes being the largest contributors.

Brouwer et al. (2023) found that presenteeism resulted in an average loss of 10.7 working hours over a four-week period.

Broadly, through these studies we can see that migraine and allergies score highest on condition-specific severity but they are comparatively rare, whereas depression and hypertension score highly on both prevalence-weighted contribution and condition-specific severity.

A consistent finding across the literature is that presenteeism is widely evidenced as a larger productivity problem than absenteeism. This is because more workers attend work while unwell, or impaired, than miss work entirely, and the associated productivity gaps can persist over long periods (Hemp, 2004). Evidence of the larger cost that presenteeism poses include:

- Schultz and Edington (2007), citing the American Productivity Audit, stated that presenteeism accounted for 66 percent of total lost productive time, equal to 1.32 hours per week, with absenteeism making up the remaining
- Medibank (2011) estimated presenteeism cost the Australian economy $34.1 billion in 2009/10, nearly four times the cost of absenteeism, equivalent to a 2.7 percent reduction in 2010 GDP
- Umbrella (2025) reported that "presenteeism is up to 16 times more costly to employers in New Zealand than absenteeism".
- Deloitte (2024) estimated that poor mental health costs United Kingdom (UK) employers £51 billion per year, with presenteeism accounting for around £24 billion making it the largest cost category
- Kigozi et al. (2017) undertook a systematic review of how presenteeism costs are estimated and incorporated them into applied economic evaluations. They found that across the interventions and disease conditions reviewed presenteeism accounted for an average of 52 percent of total costs, ranging between 19 percent to 85 percent, with the highest shares found for rheumatoid arthritis, back pain, and insomnia.
- Citing research completed by the Sainsbury Centre, Cooper and Dewe (2008) stated that it "implied that the costs of presenteeism were likely to be '1.8 times as important as absenteeism'". The authors emphasised that mental ill-health is much more prevalent within presenteeism than it is in absenteeism
- Nagata et al., (2018) in a study of Japanese workers estimated that annual per-person costs largely consist of presenteeism costs (66 percent), followed by medical and pharmaceutical costs (25 percent), and absenteeism costs (11 percent)
- Boles et al., (2004) found that presenteeism, due to health reasons, occurred approximately 3.7 times more than absenteeism.

Reported prevalence of presenteeism itself can also vary considerably. Lohaus and Habermann (2019) found that across a range of studies reported presenteeism rates can vary from 30 percent to more than 90 percent.

This specific variation, along with the differences stated earlier, is an important consideration for the modelling of presenteeism effects. As a result, rather than attempting to average across studies, we have categorised presenteeism effects by condition in broad ranges.

Effects of pharmaceuticals in reducing presenteeism

Literature on the role of medicines and/or pharmaceuticals in reducing presenteeism is less developed than evidence on condition-level presenteeism impacts. One reason is that the share of productivity loss that is "addressable" depends on many factors, including baseline disease severity, treatment adherence, timing and duration of therapy, comorbidities, job type, and workplace policies, all of which vary across settings and populations.

Of the available evidence, much of it is largely condition or medicine specific, and sensitive to measurement techniques, which creates isolated results that are difficult to assess broadly. We also acknowledge that a large proportion of the research and literature available in this field has been sponsored by pharmaceutical companies.

Depression, migraine, and allergies are the only conditions where both burden and treatment-effect evidence are independently strong. Hypertension, back and neck disorders, and osteoarthritis have reasonable burden evidence but no treatment-effect data in the notes at all.

Burton et al. (2003) suggest that productivity gains from treatment can partially or fully offset treatment costs. In particular, the authors note that "treatment for allergies, depression, and migraine headache all showed associations with improvements in presenteeism." This was informed by an examination of the literature across different medicines, with the following measured effects:

- Allergies: fexofenadine reduced overall productivity loss by 7.1 percent to 8.7 percent; nonsedating antihistamines were associated with roughly a five percent increase in daily work output
- Depression: traditional antidepressants were associated with a 36-percentage-point improvement in work impairment
- Anxiety: clonazepam was associated with a 17 percent productivity improvement
- Migraine: sumatriptan was associated a 60 percent reduction in productivity loss
- IBS: tegaserod was associated with a 5.4 percent reduction in presenteeism, equivalent to 2.5 hours per week.

The evidence in the available literature is strong enough to justify including a presenteeism channel, and to assume that medicines can reduce productivity losses for key conditions. However, it is not strong enough, nor would it be appropriate, to support a single, defensible percentage parameter for "presenteeism addressable by medicines" without further assumptions and scenario analysis. On this basis, we have established a broad categorisation of conditions by their effects on presenteeism and, ultimately, the ability of pharmaceuticals to mitigate those effects.

9.1.2 Modelling the effect of medicines on presenteeism

Our modelling approach considers that the expected presenteeism effect varies materially across conditions, reflecting differences in evidence strength, symptom burden, treatment effectiveness, and the extent to which better disease control improves performance while at work. Due to this variation, we have applied a broad estimated reduction percentage based on available evidence for each condition. This is summarised in Table 13.

Table 13 Literature evidence summary of the effect of medicines on presenteeism

Conditions	Presenteeism share of total cost by condition	Medicines/pharmaceuticals effect on presenteeism
Hypertension	Medium — 35% of cost	Weak
Mental health	Strong — 62% of cost	Strong
Asthma	Medium — 60% of cost	Medium-Strong
COPD	Weak-Medium — 14%-56% of cost	Weak
Diabetes	Medium — 45% of cost	Medium
Gout	Medium	Weak
Arthritis	Strong-Medium — 56% of cost (Osteoarthritis)	Weak
Cardiovascular disease (IHD)	Medium — 28% of cost	Weak-Medium
Dyslipidaemia	Weak-Medium — 43% of cost	Weak

Source: Various, BERL analysis

Furthermore, there is similar variation in evidence on the extent to which pharmacological treatment may reduce condition-level presenteeism effects.

Table 14 summarises the presenteeism modelling approach that we have used to translate condition-level coverage changes into labour force effects. It comprises the affected population by condition, current medicines estimated coverage of population, assumed scenario coverage, implied increase in treated population, and the share of those additional treated people expected to be in the labour force.

The estimated total potential effect of medicines in reducing presenteeism is 5.3 percent.

Table 14 Presenteeism modelling – converting condition-level coverage changes into labour force effects

Conditions	Weighting (presenteeism share of total cost)	Medicines effect on presenteeism (group from literature)	Assumed medicines effect on presenteeism (percent reduction)	Weighted medicines potential impact (effect*weights)	Condition prevalence in labour force (percent)	Aggregate potential effect from medicines (weighted impact*prevalence)
Hypertension	35	Weak	10	3.5	10.9	0.4
Mental health	62	Strong	30	18.6	13.5	2.5
Asthma	30	Medium-Strong	20	6.0	10.2	0.6
COPD	35	Weak	10	3.5	1.3	0.0
Diabetes	45	Medium	20	9.0	4.5	0.4
Gout	50	Weak	10	5.0	3.5	0.2
Arthritis	56	Weak	10	5.6	13.7	0.8
Cardiovascular disease (IHD)	28	Weak-Medium	10	2.8	2.9	0.1
Dyslipidaemia	43	Weak	10	4.3	7.4	0.3
Total						5.29

Source: Various sources, BERL analysis

Finally, Table 15 summarises the final steps in estimating the labour productivity uplift, from presenteeism reduction, as a result of an increase in medicines funding. The estimated total potential reduction in presenteeism from medicines is 5.29 percent.

Treasury estimates that the total cost of ill-health in New Zealand is 4.90 percent of GDP in their central estimate, with presenteeism making up 55 percent of the cost and 2.70 percent of GDP (Johnston, et al, 2010).

Taken as a percentage of the economy-wide estimated cost of presenteeism, 2.7 percent of GDP, this results in a total potential productivity impact from medicines of 0.14 percent of GDP. Finally, scaling for the assumed increase in coverage of 33 percent, resulting from the uplift in medicines funding, we estimate the labour productivity shock from medicines to be 0.05 percent.

Table 15 Presenteeism final shock design, labour productivity growth

Step	Value (percent)
Total potential effect presenteeism reduction from medicines (percent)	5.29
Economy-wide estimated ill-health cost (central, percentage of GDP)	4.90
Economy-wide presenteeism cost (central, percentage of GDP)	2.70
Potential productivity impact from medicines	0.14
Scalar for increase coverage of medicines from funding increase	33
Presenteeism productivity assumption from medicines funding increase	**0.05**

Source: BERL analysis

10 Health system impact modelling

10.1 Health system benefits

Increasing medicines funding can generate health system benefits, such as reduced demand, by changing the timing and location of care. That is, rather than waiting for illness to deteriorate into, for example, hospital admissions, ED visits, and specialist interventions, better access to effective medicines can support earlier disease control, improved adherence, and prevention of avoidable complications.

This is what establishes a fiscal logic for the funding of medicines. Although higher medicines spending increases upfront pharmaceutical costs, it may reduce pressure on other parts of the health system over time. The strongest logic applies to chronic disease, respiratory conditions, mental health, and other conditions where medicines can prevent acute episodes, hospitalisations, emergency care, institutionalisation, or more intensive treatment. We treat these effects as health system efficiency gains whereby medicines may substitute for, delay, or reduce the need for more expensive care elsewhere in the system.

For our analysis, such efficiency gains are expressed as fiscal savings, which means the model treats avoided downstream costs as an offset to the gross cost of additional medicines funding. However, we acknowledge that the same efficiency benefits could be used differently.

Benefits from medicines could release capacity into additional health delivery, such as reducing waiting times, treating more patients, or improving service quality. In this case, the benefits would appear less as direct fiscal savings and more as additional health output and improved outcomes. These would be better captured through Quality-Adjusted Life Years (QALYs), or other health appraisal measures.

10.2 Evidence of medicines impact on the health system

Improved access to medicines can generate benefits beyond improved health outcomes. By preventing disease progression, reducing complications, and supporting ongoing disease management, medicines can reduce the need for more intensive and costly health services.

This can relieve pressure on the health system and partially offset the costs associated with additional medicines funding. Reported benefit-cost or return ratios are often well above one, with some studies estimating returns of around US$3 to US$13 for every dollar spent on ensuring medication adherence, and others reporting nine to 28 percent reductions in total healthcare costs.

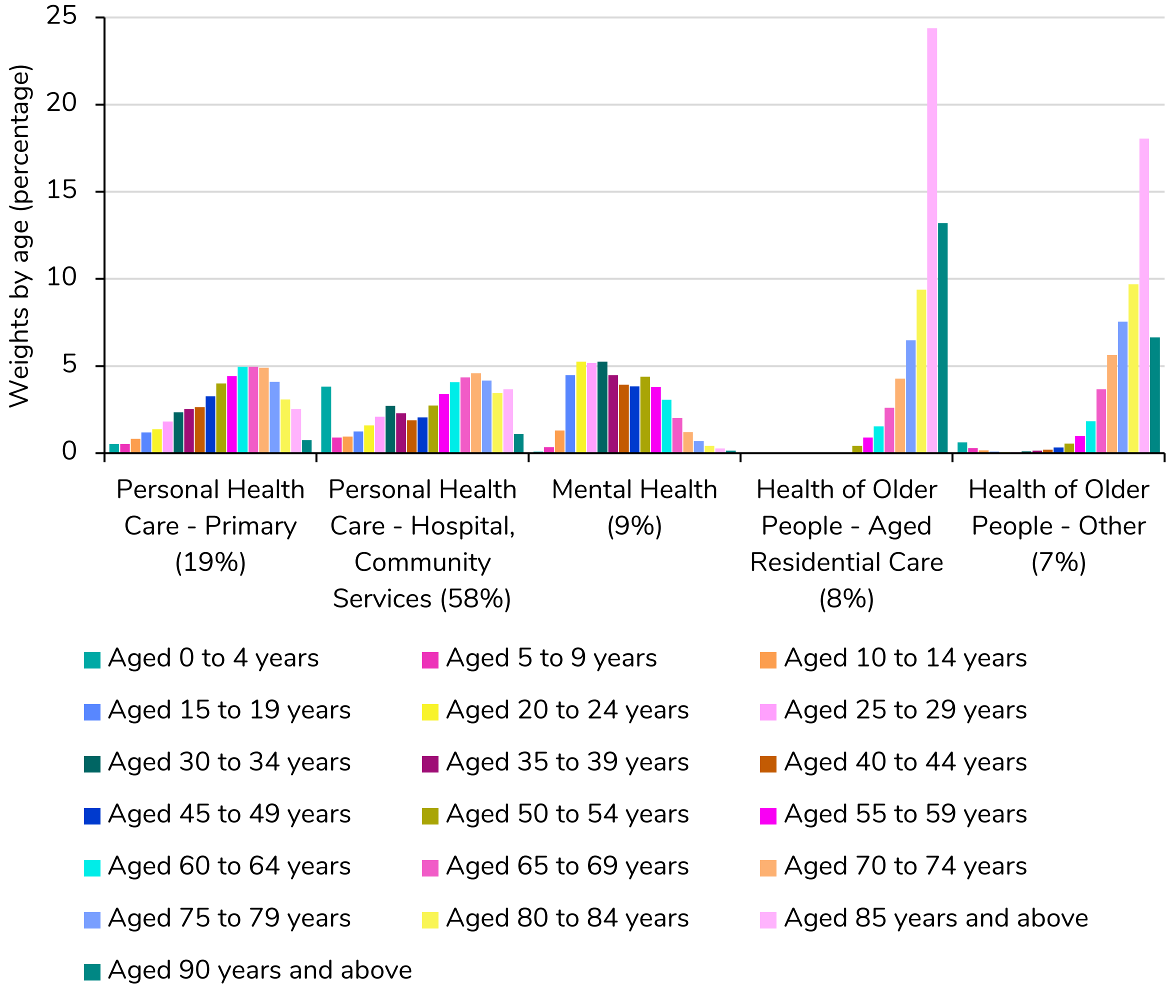
The evidence reviewed for this report suggests these effects are most consistently observed for chronic conditions where adherence to treatment can reduce hospitalisations, ED visits, and other downstream healthcare utilisation. While the magnitude of benefits varies across conditions and treatments, the literature indicates that improved access to and use of medicines can contribute to both improved health outcomes and lower health system costs. Table 26 in Appendix A summarises the evidence base underpinning this pathway.

10.3 Modelling the effects of medicines using Treasury's Long-term Fiscal Model (LTFM)

Improved access to medicines has the potential to reduce demand for other parts of the health system by preventing disease progression, reducing complications, and avoiding more intensive forms of care. As discussed previously, the evidence suggests these benefits are most likely to occur in areas such as hospital care, where effective treatment and medication adherence can reduce admissions, length of stay, and other downstream healthcare utilisation.

The LTFM captures these effects by applying adjustments to projected health expenditure growth rates. The size of the adjustment varies across service areas to reflect differences in the strength of the evidence and the expected scale of savings. Furthermore, it also varies by age groups, which the model captures as health expenditure cost shares (or weights) (Figure 16).

Figure 16 Health expenditure costs shares (weights across lifetime) by age[2]



Source: Treasury LTFM

Our approach

Our approach involves translating the health-system benefit logic into specific modelling assumptions by adjusting the residual growth factor for different health spending groups. The health residual growth factor is the part of projected health expenditure growth that is not explained by demographics or general cost growth alone. Larger offsets are assumed for hospital services, where the evidence base is strongest, while more conservative adjustments are applied to primary care, mental health, aged residential care, and other services. Table 16 summarises the assumptions applied in our modelling.

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2 Average of male and female weights by age – i.e., from younger to older.

At a high level, the table assumes that higher medicines funding can reduce future pressure on several parts of the health system, but the scale of the effect differs by service area:

- Hospital spending receives the largest adjustment, with the residual growth factor reduced from 50 percent to a central value of 40 percent. This reflects the strongest evidence base for medicines reducing admissions, inpatient bed-days, and other hospital costs.
- Primary care and mental health are both reduced to 45 percent, reflecting moderate expected offsets:
    - For primary care, medicines may reduce avoidable visits but also increase prescribing and monitoring activity
    - For mental health, medicines may reduce acute service use, but effects vary by diagnosis, drug class, and adherence.
- Other health services for older people are also reduced to 45 percent, recognising potential benefits from better medicines management, while noting the evidence is less direct than for hospital care.
- Aged residential care receives the smallest adjustment, with a central value of 47.5 percent, reflecting more modest and uncertain savings.

Table 16 Assumptions applied to the LTFM for reduction of health spending by group

Health spending group	Baseline residual growth factor	Reduction from baseline	Central value	Rationale
Primary care	50%	5% to 15% lower than baseline	45%	Medicines improve chronic disease control and may reduce visits, but primary care also expands as the site of prescribing and monitoring.
Hospital	50%	10% to 30% lower than baseline	40%	Best evidence for cost offsets is in hospital use, including fewer admissions and lower hospital spending associated with prescription drug use.
Mental health	50%	5% to 20% lower than baseline	45%	Evidence suggests medicines can reduce acute service use, but effects vary by diagnosis, drug class, and adherence, so offsets are smaller and less certain than for hospitals.
Aged residential care	50%	3% to 10% lower than baseline	47.5%	Medication review improves appropriateness, but meta-analysis found no clear reduction in hospital admissions, so expenditure effects are modest.
Other health of older people	50%	5% to 15% lower than baseline	45%	Older adults with polypharmacy and potentially inappropriate medicines have higher utilisation, but the evidence is less directly tied to a large spending offset than for hospitals.

Source: BERL

11 Summary of modelling assumptions

Table 17 summarises the assumptions used in our modelling for each benefit.

Table 17 Summary of assumptions, shocks to the LTFM, and calculations

Benefits	Shock design	Calculation
Health system benefits – Healthcare cost growth factors	Review of the literature of the benefits of medicines to healthcare expenditures.	Decrease healthcare growth factors from 0.5 to 0.445 percent on average across healthcare spending categories
Labour force participation – Healthy life expectancy (longevity and quality of life)	Increase in labour force participation Using NZIER (2025), but halving the HALE benefits to account for the lower increase in medicines spending	Healthy life expectancy increase of 1.23 percent in labour force participation. Split between quality of life (30 percent increase for 15-60 years of age) and longevity (70 percent increase for above 60 years of age). Increase is adjusted for the relevant labour force participation age for each cohort.
Labour force participation – Carer	Increase in labour force participation Informal carers make up an estimated 13.9 percent of the population in New Zealand compared to 13.5 percent across OECD countries.	The difference in informal carers compared to the OECD average represents 19,000 informal carers. 32 percent of carers in New Zealand, about 6,000, are not in the labour force. Meeting the OECD average represents an increase in labour force participation of 0.2 percent.
Labour productivity – Absenteeism	Increase in weekly hours worked. Modelling of the effect of medicines by condition and aggregated at the macro-level	We use both the bottom-up and top-down approach for a shock of 0.25 percent increase in weekly hours worked. Using the long-run assumption of the LTFM model of 33.60, the increase of

	accounting for prevalence in the labour force.	0.25 percent means 33.66 long-run hours worked for the medicines scenario.
Labour productivity – Presenteeism	Increase in labour productivity. Modelling of the effect of medicines by condition and aggregated at the macro-level accounting for prevalence in the labour force.	The labour productivity shock is 0.05 percent. When added to the 0.90 percent long-run assumption in the LTFM, this results in a total long-run labour productivity profile of 0.95 percent.

Source: BERL

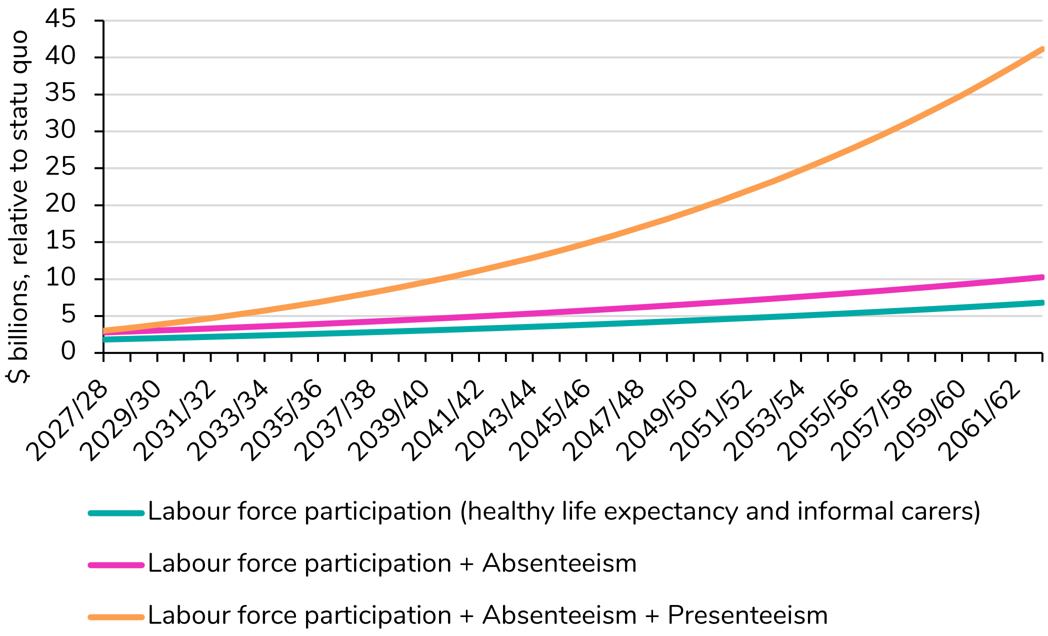
12 Benefits

12.1 Economy

Figure 17 shows the projected change in the economy (measured by nominal GDP) under the medicines funding scenario, relative to the status quo. The increase reflects the modelled labour market effects of higher effective labour input. This results from increased labour force participation among people whose ability to work is affected by health conditions, informal carers joining the labour force, and reduced absenteeism and presenteeism.

As these participation and productivity effects accumulate the economy is projected to be larger, by 2062, by nearly $41 billion (or 2.3 percent) relative to the status quo. This economic uplift provides the basis for the subsequent increase in Crown revenue, as higher economic activity flows through to higher income tax, company tax, GST, and other tax receipts.

Figure 17 Economic benefits (nominal GDP) by labour productivity benefit, relative to the status quo

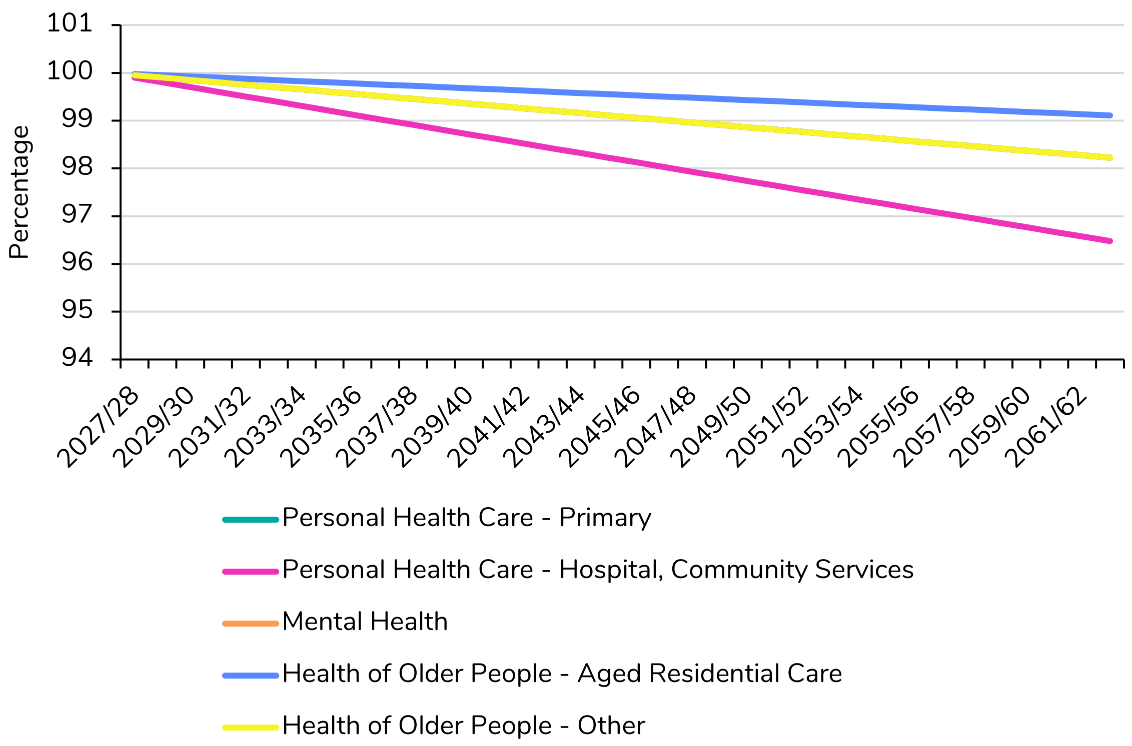


Source: BERL analysis

12.2 Health system and spending

Figure 18 presents the estimated percentage reduction in health system costs under the medicines funding scenario, relative to the status quo. Core Crown health expenses, excluding the cost of increased medicines funding, are modelling to be on average 98.6 percent of baseline health expenses (1.4 percent lower) over the projection period, and 97.4 percent of status quo health expenses (2.6 percent) at the end of the projection period in 2062. The savings are expressed relative to the baseline health expenditure path, rather than as a gross reduction in total health spending. Health system benefits should be interpreted as a lower level of expenditure than would otherwise have occurred, or costs avoided, not as a fall in health spending.

Figure 18 Reduction in health system expenses, relative to the status quo (excluding medicines funding increase), percent



Source: BERL analysis

The benefits differ across the health system. Table 18 shows that the average reduction in health expenses is highest, almost two percent, for hospital and community services, while the remaining health expense categories are reduced by less than one percent over the projection period.

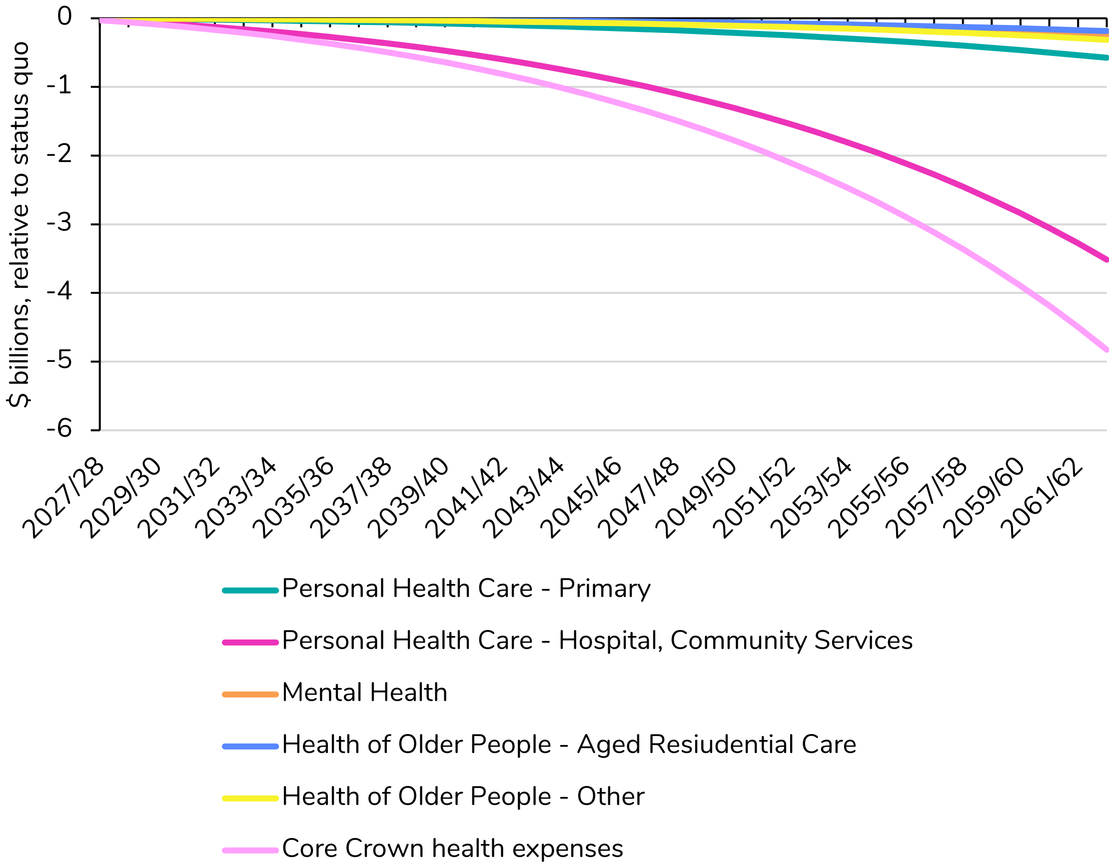
Table 18 Estimated change in health expenses, relative to baseline, percent

Health expense categories	Percent relative to baseline (2027-2062)
Personal Health Care - Primary	99.1
Personal Health Care - Hospital, Community Services	98.2
Mental Health	99.1
Health of Older People - Aged Residential Care	99.5
Health of Older People - Other	99.1
Core Crown health expenses (excluding medicine funding increase)	98.6

Source: BERL analysis

Core Crown health expenses (excluding the cost of medicine funding increase), are estimated to be nearly $5 billion lower than baseline as a result of higher medicines funding, as shown in Figure 19, with most of the reduction from hospital and community services. As mentioned earlier in the report, successive governments over the projection horizon will decide whether to accrue the reduction in demand on health services in the form of fiscal savings or, conversely, in greater service delivery without reducing health expenses. In this report, the benefits from medicines to the health system are accounted for in fiscal savings.

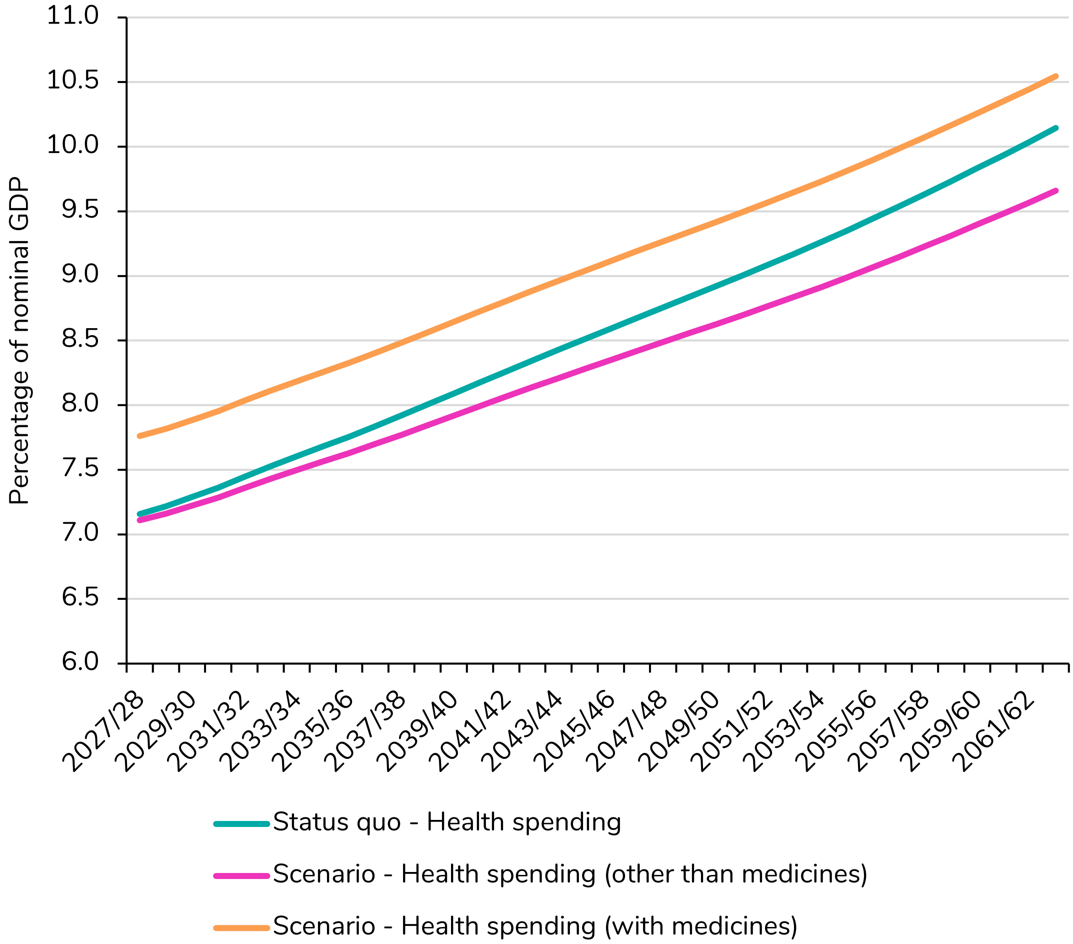
Figure 19 Estimated reduction in health expenditure relative to baseline, excluding medicines funding increase



Source: BERL analysis

Over the next 35 years, higher medicines funding is projected to increase Core Crown health expenses by 0.4 percent, from 10.1 to 10.5 percent of GDP. The cost of increasing medicines funding is partly offset by a reduction in other health expenditures relative to the status quo. When excluding the medicines funding increase, health spending is reduced as a percentage of GDP by 0.5 percent, from 10.1 percent of GDP to 9.7 percent (Figure 20).

Figure 20 Health expenditure in status quo and higher medicines funding scenarios

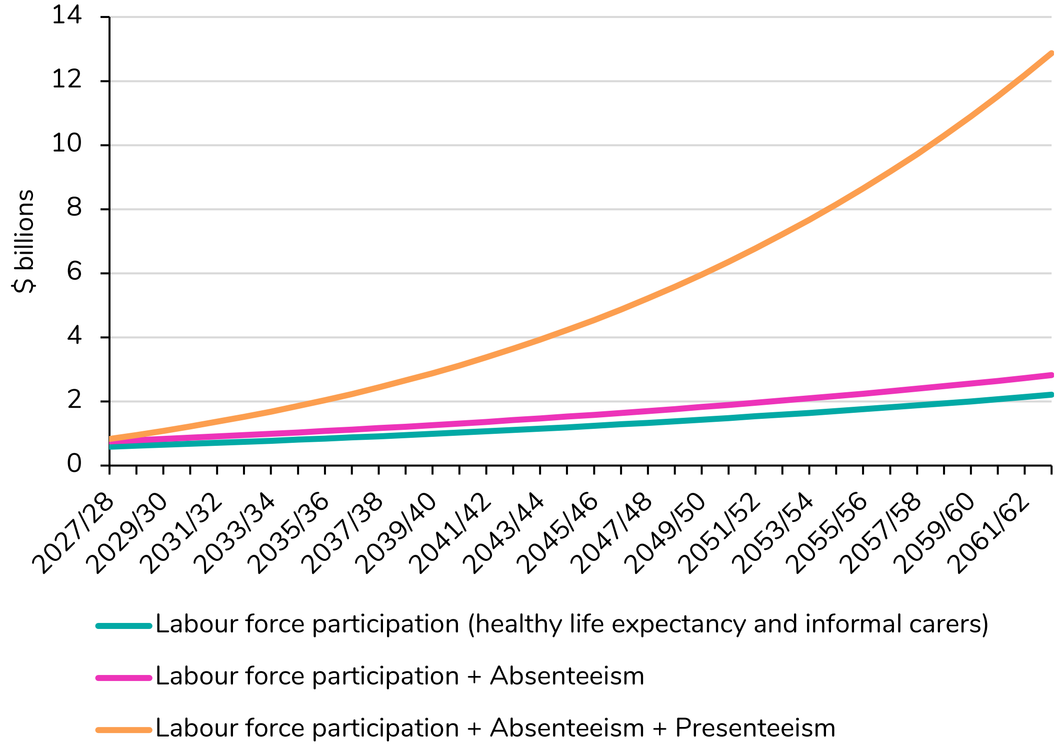


Source: BERL analysis

12.3 Government and fiscal position

Figure 21 shows the projected increase in Core Crown revenue under the medicines funding scenario, relative to the status quo, capturing the offset of the upfront fiscal cost of higher medicines funding. Core Crown revenue is projected to be $13 billion above status quo by 2062.

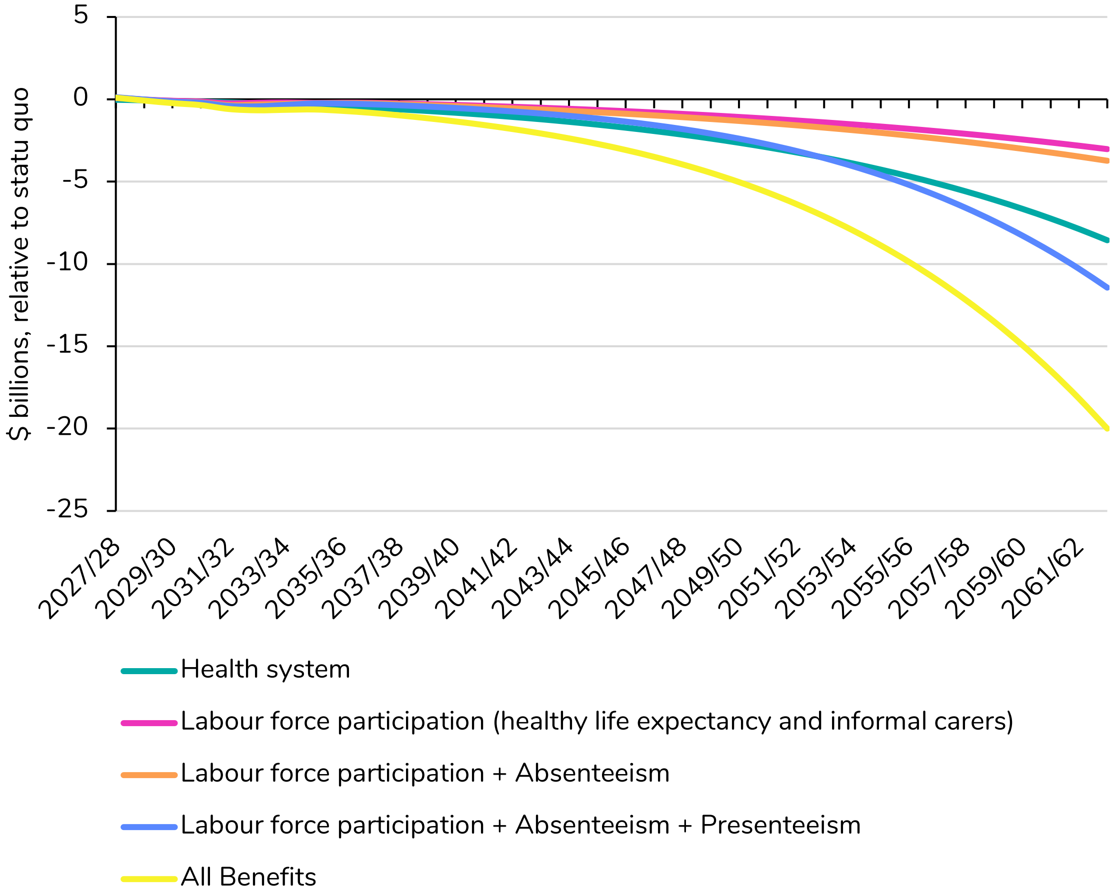
Figure 21 Core Crown revenue by labour productivity benefit, relative to the status quo



Source: BERL analysis

Figure 22 shows total Crown expenses under the medicines funding scenario relative to the status quo. Total Crown expenses are estimated to be over $20 billion lower than baseline, with labour productivity benefits providing a nearly $11 billion reduction in Crown expenses and health system benefits contributing another $9 billion.

Figure 22 Total Crown expenses, relative to the status quo



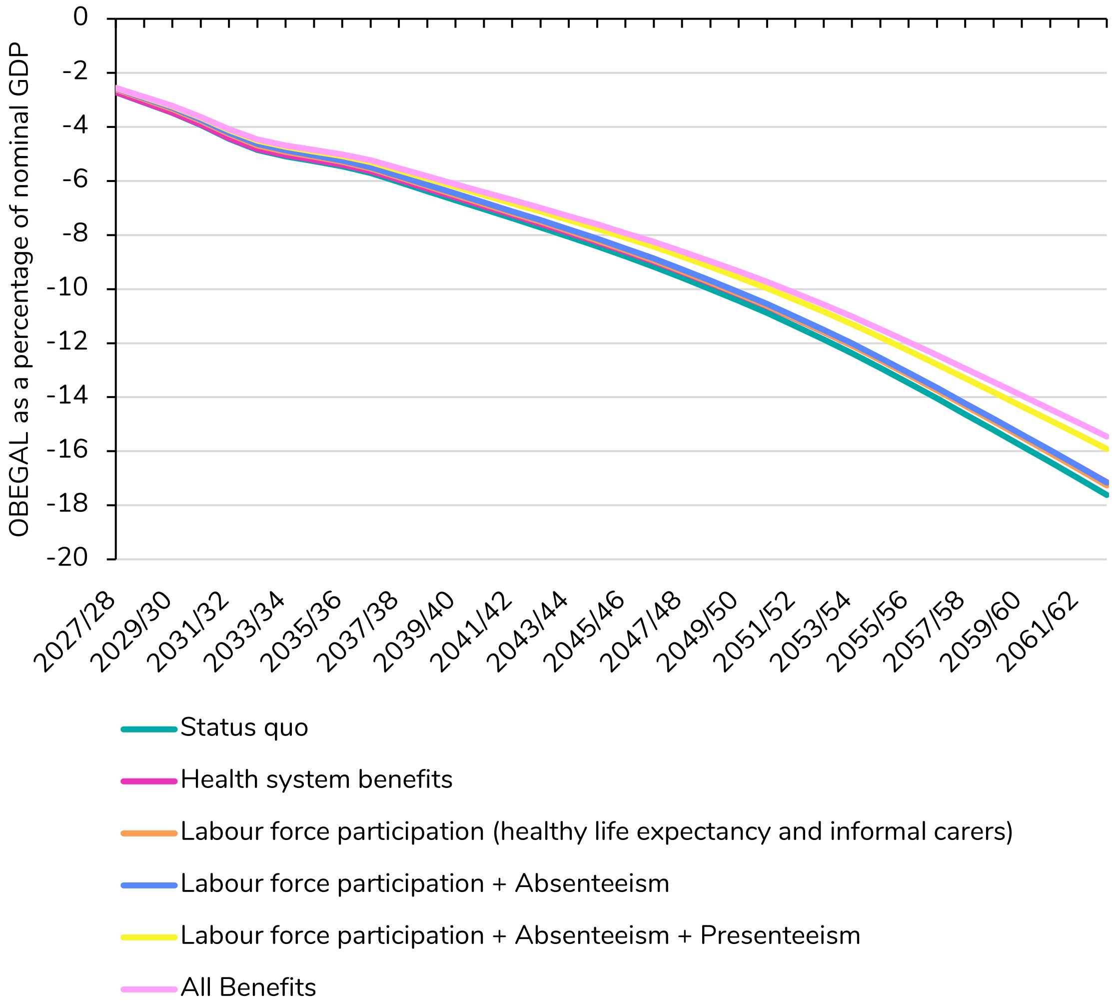
Source: BERL analysis

Government Operating Balance Before Gains and Losses (OBEGAL)

Figure 23 shows the government operating balance before gains and losses (OBEGAL) as a percentage of nominal GDP. It shows the net annual fiscal effect of the medicines scenario generated through higher economic activity, increased Crown revenue, and reductions in other areas of health expenditure.

OBEGAL as a percentage of GDP is projected to reach a deficit of nearly 18 percent by the end of the projection period in the status quo. The combined benefit from health system benefits and labour productivity would improve the OBEGAL as a percentage of GDP to a deficit of -15.5 percent by 2062, in large part thanks to presenteeism benefits.

Figure 23 Fiscal benefits (OBEGAL) as a percentage of the economy (nominal GDP), status quo, and benefits from medicines funding

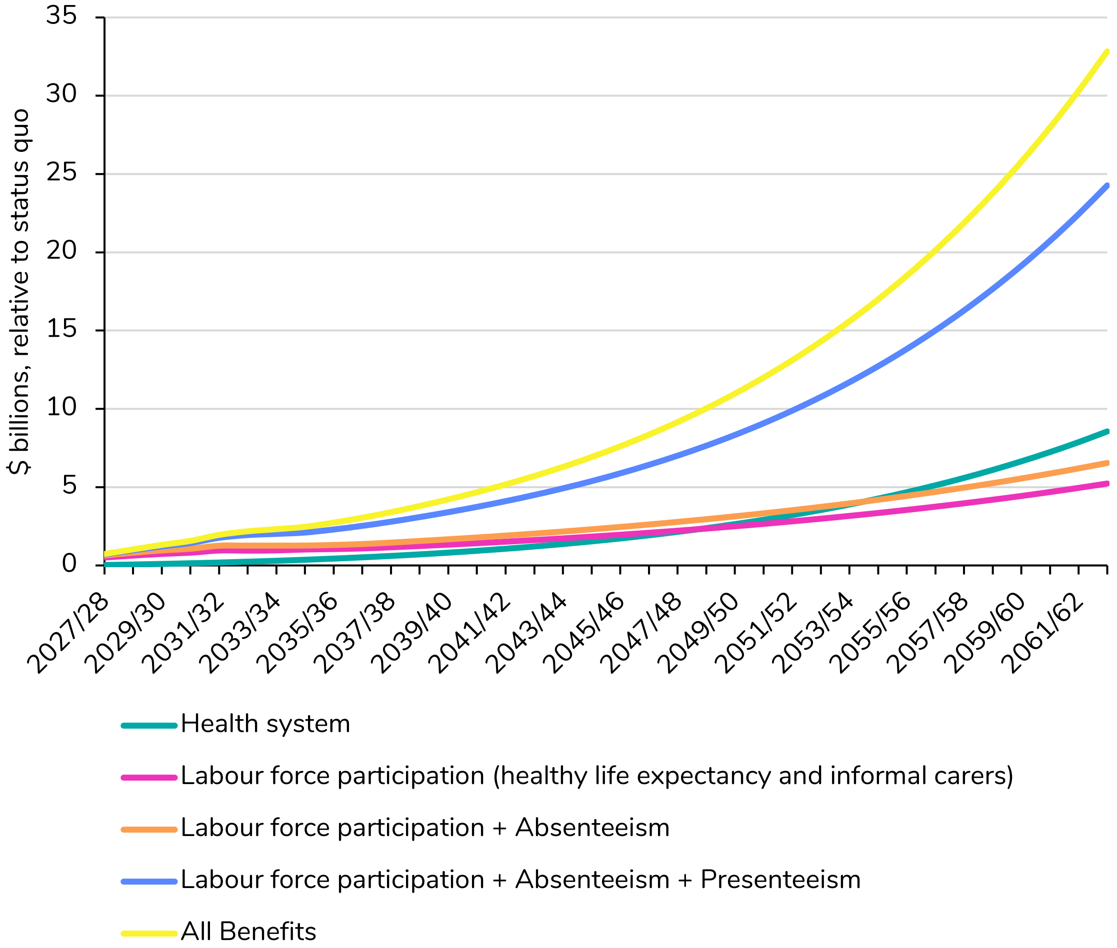


Source: BERL analysis

Figure 24 compares the projected OBEGAL path under the status quo and medicines funding scenarios in absolute terms. While higher medicines funding cannot prevent altogether the deterioration of the government's fiscal position over the next 35 years, it would increase the government's operating balance by an estimated $33 billion by the end of the projection period.

The bulk of the benefits to the OBEGAL over the next 35 years from higher medicines funding are from presenteeism benefits and through labour productivity benefits. This is consistent with the literature and Treasury research which both indicate that labour productivity growth provides the best avenue to maintaining fiscal sustainability.

Figure 24 Fiscal (OBEGAL) benefits, relative to the status quo

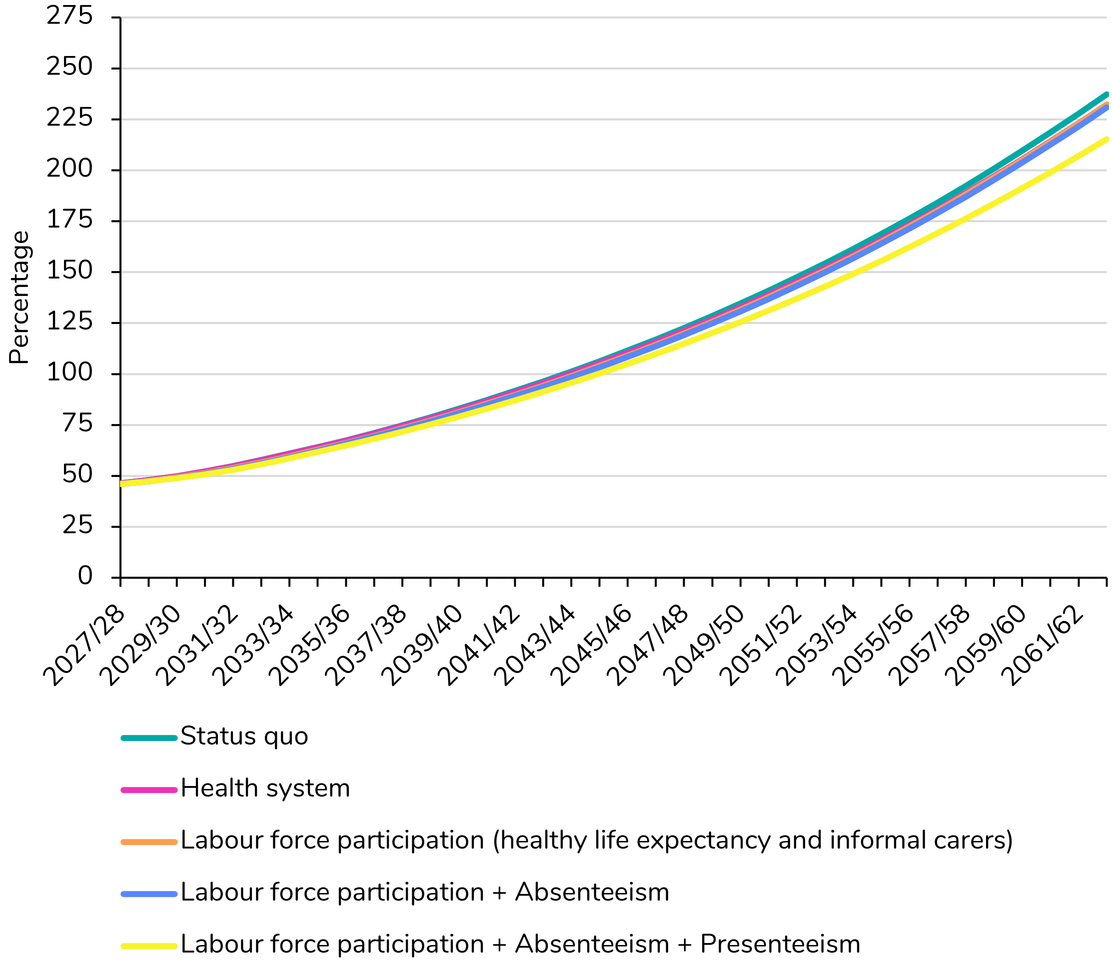


Source: BERL analysis

Finally, Figure 25 presents the projected gross debt path, and shows how higher medicines funding affects the Crown's debt trajectory from a long-term fiscal sustainability perspective. It provides a summary measure of whether increased medicines funding contributes to a stronger long-term fiscal position, rather than only improving annual flows such as revenue or OBEGAL.

Under the baseline scenario, net debt to GDP is projected to be above 237 percent of nominal GDP by 2062. Higher medicines funding would lower net debt to GDP to 215 percent of nominal GDP, a reduction of 22 percentage points.

Figure 25 Net debt path by scenarios



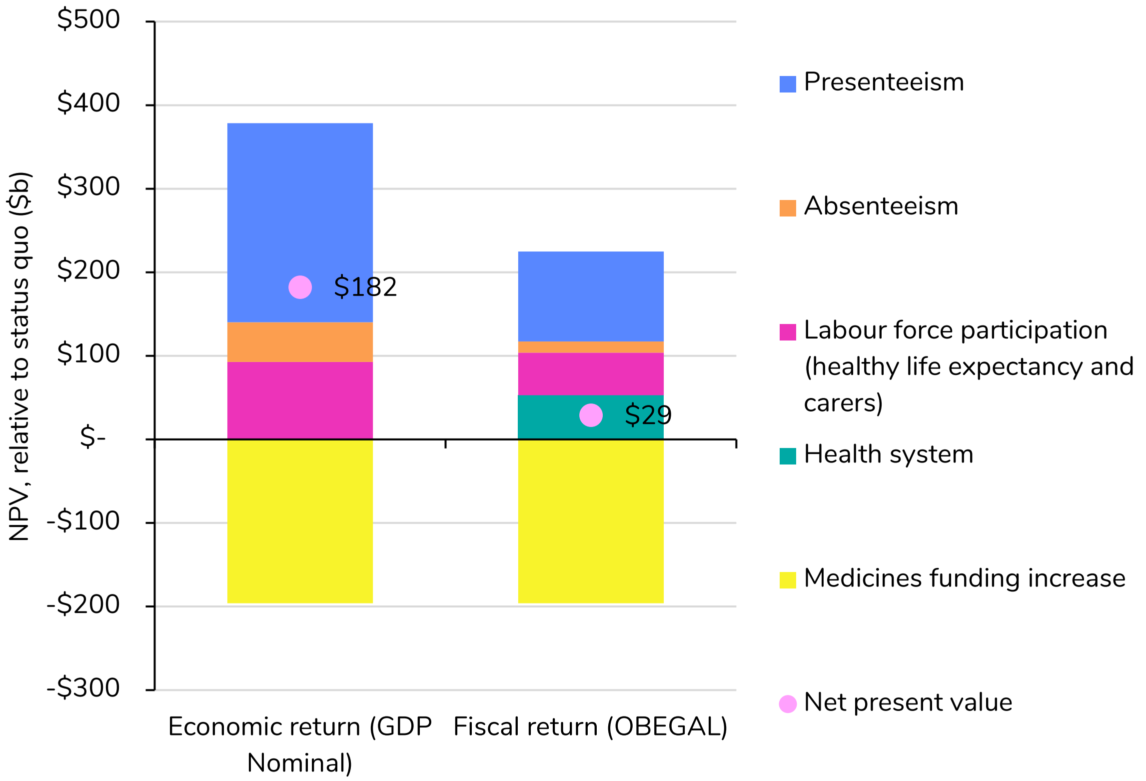
Source: BERL analysis

13 Cost-benefit analysis (CBA)

13.1 Net present value (NPV)

The return to the overall economy is measured by the NPV benefits to nominal GDP, while the fiscal return is measured by the return from higher medicines funding relative to the Crown's operating balance (i.e., the improvement in the Crown's operating balance relative to the status quo).[3] Figure 26 presents the NPV of the medicines funding scenario, providing a discounted measure of the net benefit of increasing funding for medicines over the next 35 years. The NPV shows net benefits for nominal GDP and OBEGAL respectively of $182 billion and $29 billion over 35 years. As emphasised in the introduction, these NPV results do not account for the social value of improved health outcomes, nor the wider economic downstream impacts, and are therefore conservative.

Figure 26 Net present value out to 2062, relative to the status quo

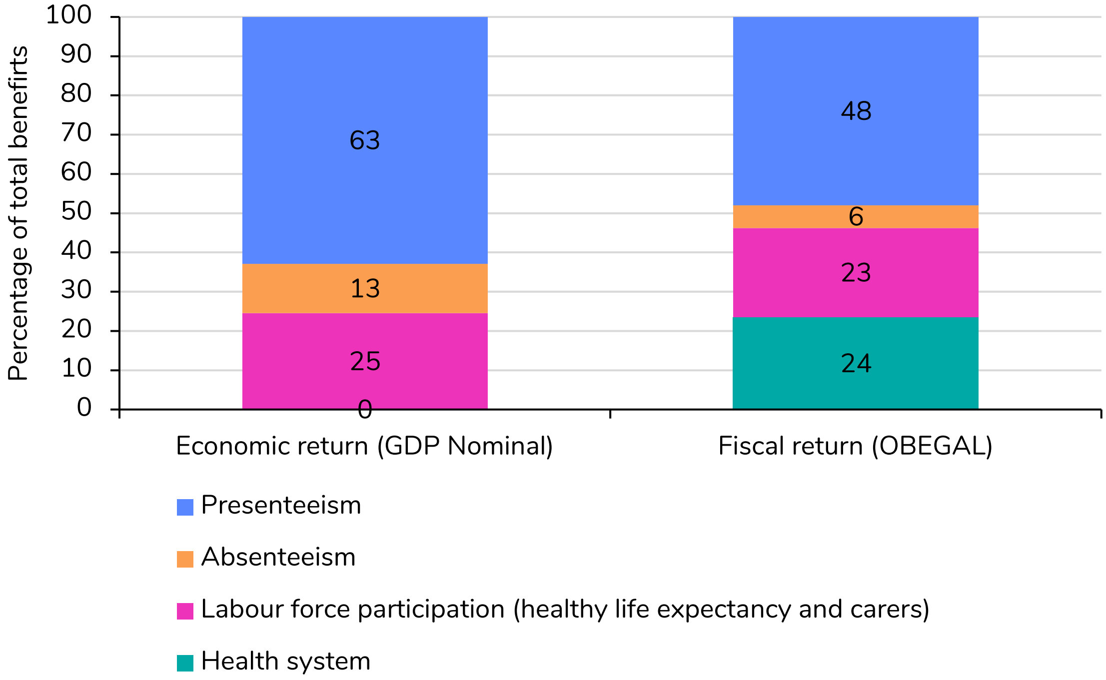


Source: BERL analysis

[3] Using real GDP would require deflating both nominal GDP and the increase in medicines funding by the same inflation scalar.

Figure 27 shows the composition of the monetised benefits from increased medicines spending for the economic return and the fiscal return. Presenteeism represents the largest share with 63 percent and 48 percent, respectively, of total benefits for the economic return and fiscal return. The remaining labour productivity benefits, absenteeism, and labour force participation (healthy life expectancy and carers), contribute 38 percent and 29 percent, respectively, for the economic return and the fiscal return. Benefits to the health system make up about a quarter, 24 percent, of fiscal benefits.

Figure 27 Composition of benefits from the effects of medicines



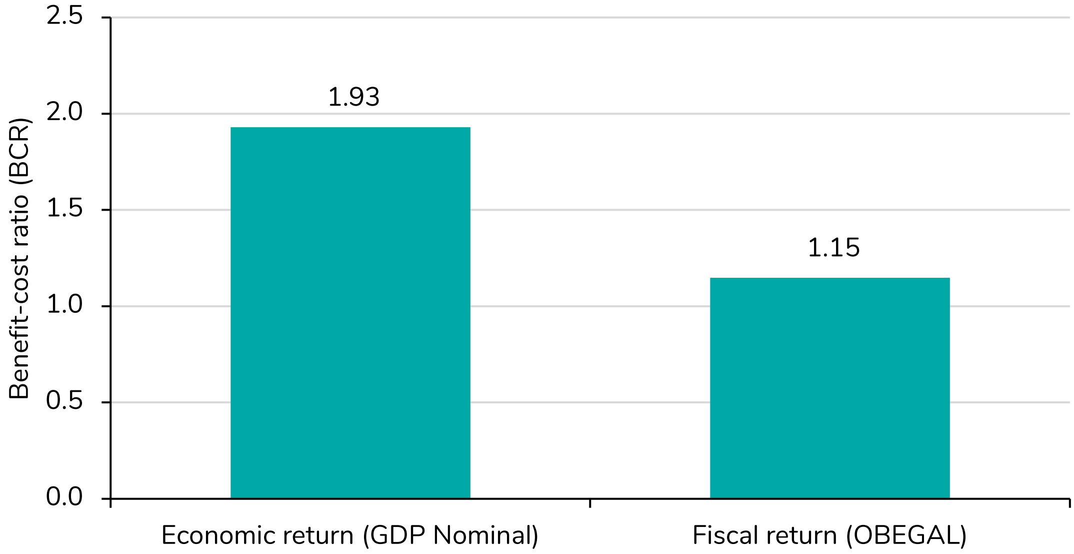
Source: BERL Analysis

13.2 Benefit-cost ratio (BCR)

The benefit-cost ratio compares the estimated benefits of an investment with its costs. We use it as a measure of the value generated by increased medicines funding. A benefit-cost ratio greater than one indicates that benefits exceed costs.

Figure 28 presents the estimated benefit-cost ratio of our modelling from a government fiscal perspective. It shows that for the medicines funding scenario, the benefit-cost ratio for the overall economy (nominal GDP) and the government's fiscal position (OBEGAL) is positive and is respectively 1.93 and 1.15. That is, the benefits exceed the costs from the perspective of both the overall economy and the government's fiscal position.

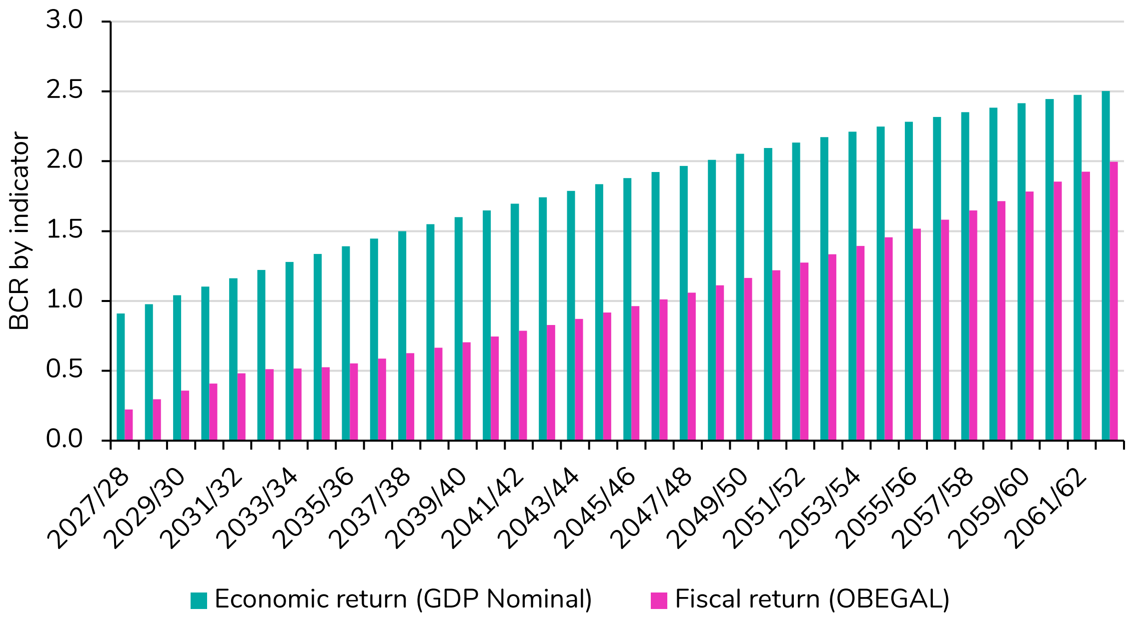
Figure 28 Benefit-cost ratio (BCR)



Source: BERL analysis

We present the benefit-cost ratio over our measured period in Figure 29. The overall economic return (nominal GDP) is achieved with a benefit-cost ratio of one in year three (2029/30). The fiscal return (OBEGAL) benefit-cost ratio BCR meets the one threshold later, in approximately year 20 (2046/47), and reaches a benefit-cost ratio of 2 by the end of the projection period in the early 2060s.

Figure 29 Timeline of benefit-cost ratio (BCR)



Source: BERL analysis

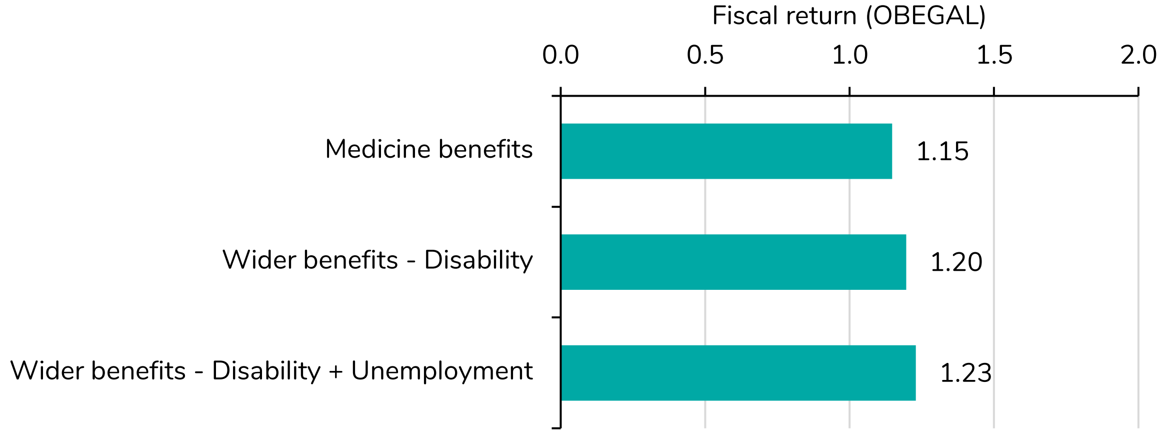
14 Wider benefits

14.1 Summary of wider benefits from medicines

The estimated wider benefits are considered indicative. Wider benefits are treated separately from the core results because the evidence base is less applicable to estimating macroeconomic impacts. The general direction of effects is supported by the literature; better health can reduce care needs, support work participation, and lower income-support pressures. But the available evidence is often condition-specific, treatment-specific, or based on populations and institutional settings.

As outlined in previous sections, the wider benefits of this assessment are lower reliance on disability or unemployment-related welfare payments. Figure 30 summarises the benefit-cost ratio of the wider benefits over and above the medicines benefits return of 1.15. Adding the benefits from reduced disability and unemployment welfare payments raises the overall benefit-cost ratio from medicines to 1.20 and 1.23 respectively.

Figure 30 Benefit-cost ratio of the wider economic benefits from increasing medicines funding



Source: BERL analysis

14.2 Disability benefits

The estimate of the reduction in disability benefits is an indicative scenario based on international literature evidence. Lichtenberg (2021) examined the impact of biopharmaceutical innovation on disability and Social Security recipiency in the United States between 1998 and 2015. The study found that newer drug classes were associated with lower disability rates and lower receipt of disability-related income support payments.

The research estimates a 3.1 percent long-term reduction in disability benefit payments. This is applied to approximately 100,000 people, who are living with a health condition and are on the Supported Living Payment, to model the fiscal effects of medicines as an indicative scenario over the forecast horizon (Table 19).

Table 19 Number of people receiving Supported Living Payment, by condition

Condition	Jun-26
Psychological or psychiatric conditions	40,329
Intellectual disability	7,209
Musculo-skeletal system disorders	9,342
Nervous system disorders	7,206
Cardio-vascular disorders	6,066
Accidents	3,585
Cancer and congenital conditions	8,382
Other disorders and conditions	15,975
Total	**98,094**

Source: MSD

The increase in the overall benefit-cost ratio from medicines on the Crown account is from 1.15 for the core benefits from medicines, to a 1.20 return from an increase in funding on medicines.

14.3 Unemployment benefits

An additional sensitivity is medicines improving the health and work readiness of people currently receiving welfare payments. This sensitivity is particularly relevant given the condition profile of people receiving health-related or work-capacity-related income support.

This differs from the standard labour force participation shock, where some people move from outside the labour force into the labour force and may initially be counted as unemployed before finding work.

This is considered a sensitivity because it relies on the assumption that improved health is accompanied by sufficient labour demand, employment support, and workplace flexibility for affected people to move into work. For example, Li et al. (2022) found that the use of pharmacological treatment for attention-deficit/hyperactivity disorder (ADHD) is associated with a 10% lower risk of long-term unemployment among working-age adults with ADHD.

Table 20 and MSD data shows that health is a barrier to labour-market participation. At the end of June 2026, 218,481 people were receiving Jobseeker Support, with about 98,000 in the health condition or disability category.

Table 20 Number of people receiving Jobseeker Support, by condition

Condition	Jun-26
Psychological or psychiatric conditions	49,056
Musculo-skeletal system disorders	14,076
Accidents	6,912
Cardio-vascular disorders	4,446
Pregnancy-related conditions	435
Other disorders and conditions	23,259
Total	**98,184**

Source: MSD

An illustrative sensitivity reduction of one percent in the number of job seekers with a condition is conducted. This would reduce the number of job seekers by nearly 1,000 and implies a reduction in the unemployment rate by 0.06 percentage points, based on the current unemployment rate of 5.6 percent. The long-run assumption for the LTFM is 4.25 percent, which translates into a sensitivity reduction in the unemployment rate to 4.19 percent in the long-run.

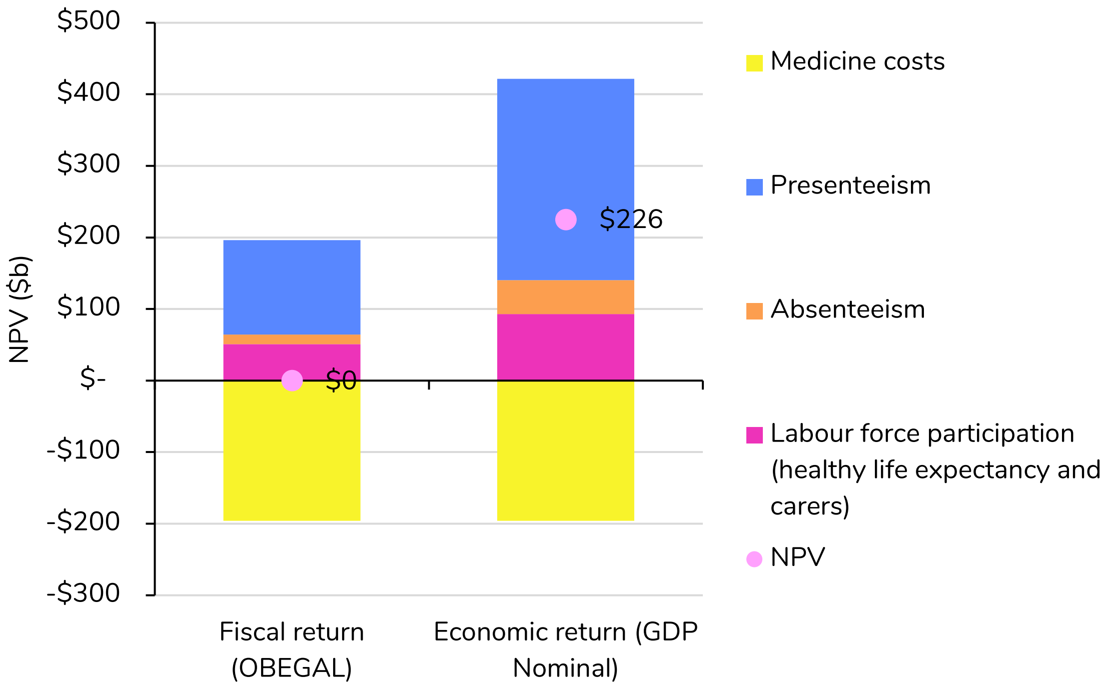
However, even a small reduction in the unemployment rate can have material benefits to the Crown's fiscal position. Assuming a five percent reduction in the number of unemployed people with a health condition, increases the benefit-cost ratio from medicines funding from 1.15, in the central scenario, to 1.18.

15 Alternative health system benefits method

If health system benefits are accrued through the provision of additional health services, this does not mean an absolute welfare reduction in benefits from medicines. However, it does change the nature of the benefits and how they are accounted for. We consider a scenario that shifts the benefits from fiscal savings to the provision of additional health services and delivery relative to the status quo. These additional health services and delivery, over the next 35 years, would increase labour force participation, and reduce absenteeism and presenteeism (note that there would be no reduction in healthcare spending relative to the status quo).

Figure 31 summarises the minimum presenteeism benefits required for increased medicines funding to be fiscally neutral when health system benefits are excluded. In effect, it tests a more conservative version of the fiscal case by removing the assumed savings from avoided hospitalisations, emergency care, residential care, and other downstream health expenditure.

Figure 31 Presenteeism benefits required without health system fiscal savings



Source: BERL Analysis

The required presenteeism benefits, as a result of health system benefits being accounted for in increased health services delivery instead of fiscal savings, is 0.056 in additional labour productivity benefits instead of 0.047. This is equivalent to a 19 percent increase in presenteeism impact and shock resulting from the uplift in health services delivery.

16 Benchmark

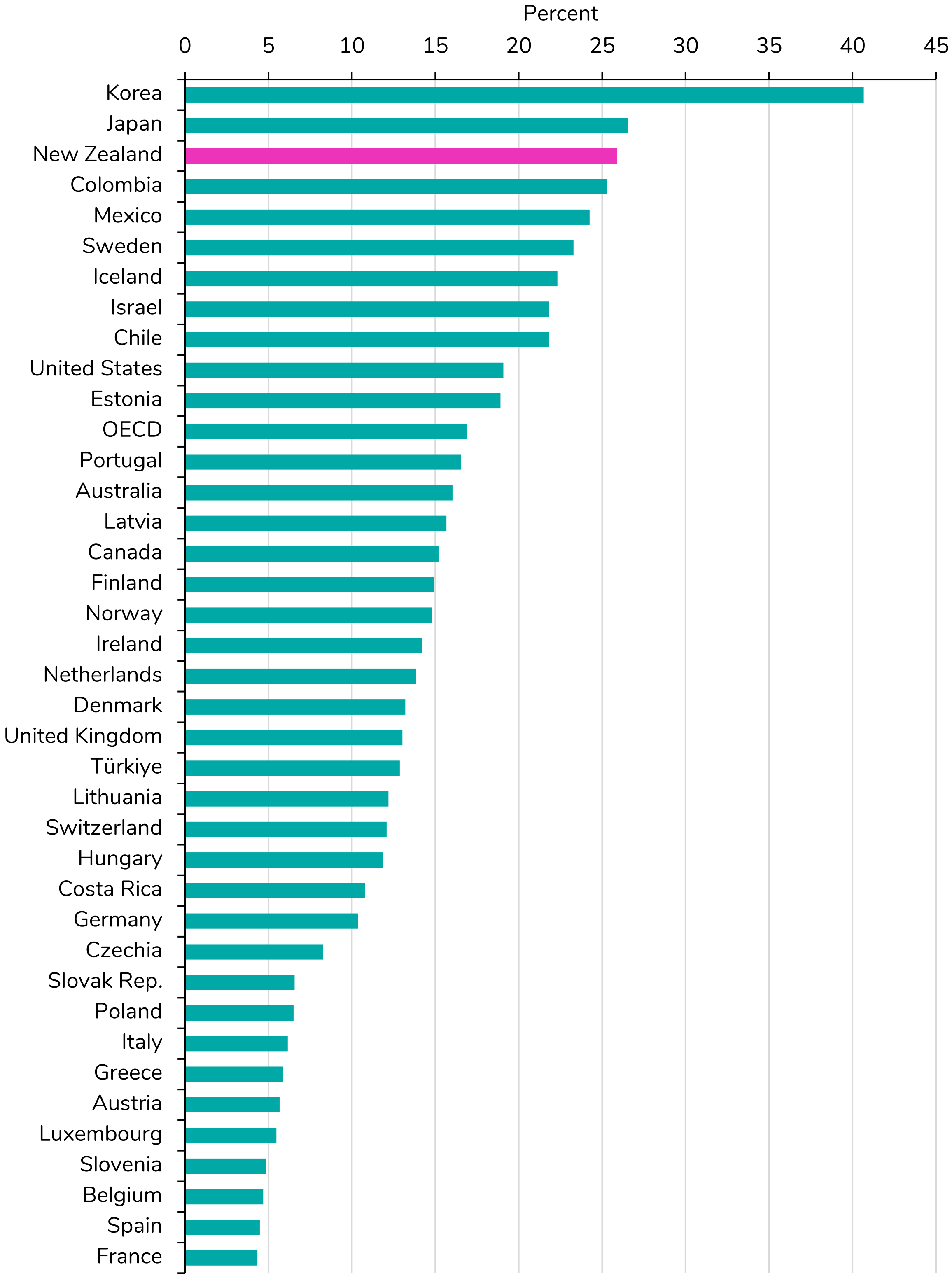
This section benchmarks the results of our CBA against established estimates (see Section 5.). We focus on examining whether the relative size of the estimated benefits are both plausible and not out of step with the literature.

16.1 Healthy life expectancy

Benefits that accrue from increasing the healthy life expectancy of a population are relatively modest in comparison to the benefits from reducing absenteeism and presenteeism. This is because higher labour force participation has less economic benefit than lifting labour productivity over time across the population.

Furthermore, in New Zealand's case there is already relatively high labour force participation, particularly among older workers, relative to the OECD. Our modelling supports the logic that the largest labour-market return is likely to come from reducing presenteeism. Absenteeism and participation effects are important but constrained by New Zealand's existing labour force participation rate and labour-market settings.

Figure 32 Labour force participation, 65 years or more, percent



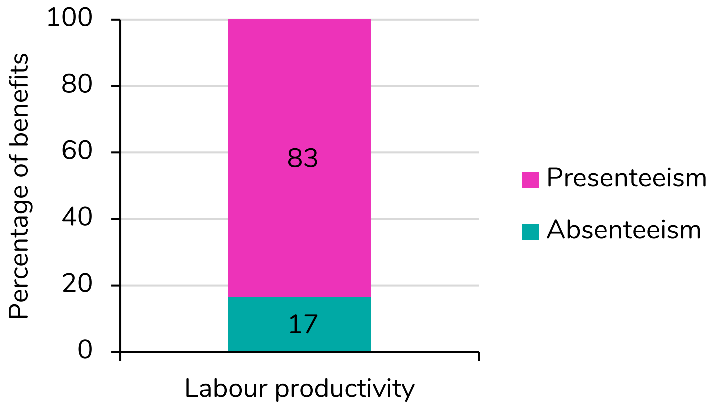
Source: OECD

16.2 Ratio between absenteeism and presenteeism

The ratio of presenteeism to absenteeism costs is generally strongly weighted towards presenteeism. The literature suggests presenteeism costs are typically around two to four times larger than absenteeism costs, although the ratio varies by condition and study. Medicines generate a larger productivity benefit through reduced presenteeism than reduced absenteeism, in part due to increased disease control improving how effectively people operate while at work, not only whether they attend work.

Many individuals work while ill or impaired, resulting in their productivity reducing, and the prevalence of presenteeism is significantly higher than absenteeism (i.e., more individuals report experiencing presenteeism). In addition, absenteeism outcomes are less sensitive to pharmaceutical investment alone as they are also shaped by labour market institutions, leave policies, and social norms. In our modelling, the reduced presenteeism benefit is around five times larger than the reduced absenteeism benefit. This broadly aligns with, although it is slightly above, the evidence in the available literature (Figure 33).

Figure 33 Benchmarking labour productivity benefits for nominal GDP



Source: BERL analysis

The presenteeism to absenteeism benefits ratio in our modelling is 5.0. This relatively higher ratio of presenteeism to absenteeism benefits in New Zealand is explained by:

- Higher average hours worked than the OECD average (lower absenteeism benefit potential)
- Lower average mental health outcomes than the OECD average (higher presenteeism benefit potential)
- Lower average productivity relative to the OECD average (higher presenteeism benefit potential)

The larger contribution of presenteeism, relative to absenteeism, is broadly consistent with the international literature which frequently finds that productivity losses while at work are slightly higher than those associated with absence as a result of sickness.

A key reason is that presenteeism typically affects a much larger share of the workforce than absenteeism. Many individuals continue working while managing chronic conditions, but they experience reduced productivity due to symptoms, fatigue, pain, or impaired concentration. Consequently, small improvements in on-the-job productivity can generate larger aggregate economic gains than reductions in sickness absence alone.

Furthermore, in New Zealand's case, there are relatively high rates of chronic conditions and mental health disorders which are commonly associated with presenteeism. A recent review of Mental Health at Work, by the OECD, concluded that the total cost of mental health to the New Zealand economy is in the order of around four to five percent of GDP. This is at the top-end among OECD countries (OECD, 2018). Finally, the average per annum hours worked in New Zealand (1,708 hours) are higher than the OECD average (1,620 hours), which translates into a lower absenteeism benefit potential.

16.3 Implied resolution of ill-health productivity cost

Table 21 summarises the scale of the modelled labour productivity benefits, as a result of medicines funding reducing absenteeism and presenteeism, relative to the size of the economy over the 35-year NPV period.

Reduced absenteeism is estimated to generate an NPV benefit of about $47 billion, equivalent to 0.19 percent of GDP in NPV terms. The benefit from reduced presenteeism is estimated at about $238 billion, equivalent to 0.94 percent of GDP in NPV terms. Combined, the two channels generate an estimated $285 billion in NPV benefits, or around 1.13 percent of GDP in NPV terms.

Table 21 Medicines benefit as a percentage of GDP (Net present value, 35 years)

	NPV Benefit ($ billions)	GDP NPV ($ billions)	Percentage of GDP
Absenteeism	47	25,258	0.19
Presenteeism	238	25,258	0.94
Total	285	25,258	1.13

Source: BERL

The medicines benefit is estimated at 1.13 percent of GDP (on an NPV basis). Table 22 benchmarks the medicines benefit against Treasury's estimates of the indirect productivity cost of ill-health across the low-, medium-, and high-cost assumptions (Treasury, 2010).

- Under the low-cost assumption, where ill health productivity costs are estimated at 2.7 percent of GDP, the modelled medicines benefit would address 42 percent of these costs.
- Under the medium-cost assumption of 5.15 percent of GDP, medicines would address under a quarter, 22 percent, of these costs.
- Under the high-cost assumption of 7.6 percent of GDP, medicines would address 15 percent of the total productivity cost of ill health.

Table 22 Estimated share of medicines benefit of ill health productivity cost

	Estimated total indirect cost of ill health (percentage of GDP)	Total medicine impact (NPV, percentage of GDP)	Share of cost resolved from medicines (percentage)
Low	2.70	1.13	42
Medium	5.15	1.13	22
High	7.60	1.13	15

Source: Treasury, BERL

17 Discussion

The sensitivities in the previous section address the two key assumptions and uncertainties driving the estimated benefits of medicines to the economy and the Crown's fiscal position.

These are, firstly, to what extent health system benefits will be accrued either through lower health expenditures or greater service delivery and, secondly, the scale of presenteeism benefits which represent the bulk of the labour productivity benefits but are also generally the most uncertain. This section provides a discussion on the policy implications of the balance between health system and labour productivity benefits from medicines.

17.1 Return on medicines funding and allocation across types

Our modelling of the economic and fiscal returns is based on an impartial and general increase in the overall funding for medicines, without specifying which types or groups of medicines receive the increased level of expenditure. However, the type and groups of medicines funded does matter for their expected economic and fiscal benefits, particularly the nature of the benefits, their magnitude, prevalence, and timing.

Ultimately, whether benefits to the health system are accrued through lower health spending or through greater health service delivery, the decision about which medicines to prioritise depends on the government's objectives and which benefits it seeks to maximise through improved availability and access.

Table 23 provides a broad view of the relative return of different medicines in terms of their aggregate population labour productivity benefits and healthcare savings. This was summarised from the available literature, and it indicates that medicines do not produce a single uniform type of return. Some medicines mainly improve workforce productivity, some mainly reduce health system pressure, and some may do both.

The strongest posited return is from medicines that sit in the higher-productivity and higher-healthcare savings area. These include asthma, diabetes, and cardiovascular medicines, which are expected to generate both meaningful labour market gains and material reductions in downstream health system demand. Other high-value categories include COPD and hypertension medicines.

Table 23 Indicative return profile of medicines by benefit pathway

		Labour productivity benefits		
		Lower	Moderate	Higher
Healthcare savings	Lower	Rare disease medicines	Allergies and rhinitis medicines	Anxiety disorder medicines, mental health medicines, migraine medicines
	Moderate	Cancer medicines	Gout medicines	Arthritis and rheumatic disease medicines, multiple sclerosis medicines
	Higher	Dementia medicines	COPD medicines	Asthma medicines, diabetes medicines, cardiovascular medicines, HIV antiretrovirals

Source: BERL analysis

Mental health and migraine medicines may generate high labour productivity benefits even when healthcare savings are lower, because their main return comes through reduced presenteeism, absenteeism, and improved day-to-day functioning.

In contrast, dementia medicines may have relatively high healthcare savings but lower direct labour productivity effects, because benefits are more likely to arise through delayed care needs and reduced system pressure.

17.2 Phasing-in of medicines funding increases

Similarly, alongside the allocation of medicines across types, while the medicines funding increase in the modelling is assumed to happen in 2027 as a step-change, another possibility is a phase-in increase.

Such a phase-in could be designed to maximise the speed, scale, and certainty of returns to both the economy and the government. Funding could be allocated first to the highest return opportunities within each medicines group. Funding could then shift to the next-best category, once additional spending in the initial area is expected to deliver lower marginal returns.

From a government perspective, this staged approach also reduces fiscal risk. The upfront investment can be introduced progressively while evidence is gathered on uptake, prescribing behaviour, patient access, health outcomes, workforce effects, and health system utilisation.

18 Conclusion

The intervention logic and cost-benefit analysis in this report present the case that increased medicines funding generates fiscal and economic returns that justify lifting the share of health expenditure on medicines to the OECD average, from 4.9 percent to 13.3 percent.

Over the next 35 years the economic return, measured by nominal GDP, is nearly 1.93 to 1, and the fiscal return, measured by improving the Crown's operating balance, is 1.15 to 1.

The main benefit pathway is through improved health outcomes that increase effective labour input. Better access to medicines is expected to improve chronic disease management, mental health outcomes, prevention of avoidable illness, and the number of years lived in good health. These health gains translate into three labour market benefits; higher labour force participation, and reduced absenteeism and presenteeism. Labour productivity benefits would have both an immediate and gradual impact on the economy and would make the investment in medicines cost neutral within a year. Under our approach, increased medicines access reduces pressure on downstream services by improving disease control, reducing avoidable complications, and shifting some care away from hospitals, emergency care, and ongoing service use. The lower growth in health spending would contribute to improving the Crown's fiscal position over the next 35 years. The fiscal return would, under the set of plausible assumptions, compound to cover the investment in medicines in just under 20 years.

The two major uncertainties to our results are, firstly, whether benefits to the health system are accrued in the form of fiscal savings or more health service delivery and, secondly, the scale of presenteeism. The presenteeism benefits to labour productivity are required to be 19 percent higher than the central medicines increase scenario if health system benefits are accrued in the form of more health service delivery. Conceptually, this amounts to shifting the benefits from fiscal savings from the health system to, instead, achieving greater presenteeism and labour productivity benefits through greater health service delivery. This cost-benefit analysis is based on a medicines funding increase scenario that does not specify the composition of funding across different types and groups of medicines. The precise economic and fiscal returns from lifting access to medicines depends on the objectives and outcomes sought be the government, and whether labour productivity, health system benefits, or both of these, are prioritised. The phasing of increased medicines funding also matters. While a step-change is assumed in meeting the OECD average in this scenario, other options can also maximise the desired return.

Appendix A Summary of key literature findings

This appendix summarises the literature reviewed relating to absenteeism and presenteeism. The reported estimates served as a broad basis for the assumptions that we applied in our modelling exercise. The main reason for providing broad estimates in our analysis is due to both the variation in the available literature as well as the different types of measurements, periods, and populations studied. These factors do not support estimating an aggregated result to apply in our modelling. This is true for both absenteeism and presenteeism.

Absenteeism

The literature on absenteeism is more developed with a particular feature being that it is comparatively easier to measure. Broadly, there is extensive evidence on how specific conditions impact absenteeism, but the extent to which specific medicines reduce absenteeism by condition is less developed. This is also the case for presenteeism.

Goetzel et al., (2004), an early and highly cited study, is a key source that is used in many later pieces of analysis. At an aggregate level, the authors found that on average across the top ten conditions, absenteeism was equal to 10.4 days per year. Due to the cross-condition nature of this synthesis study, it is a primary source in our review.

Mental health and asthma are the most well evidenced in this area, with multiple sources available (Graff et al., 2011; Goetzel et al., 2004; Zhang et al., 2016). This is followed by COPD, acute respiratory infections, and migraines (Minov et al., 2024; Goetzel et al., 2004; Keech and Beardsworth, 2008). These specific conditions can be broadly understood as having a high-level of burden on absenteeism. Further, we find across the literature that arthritis, allergies, gout, and cardiovascular diseases are broadly moderately burdensome on absenteeism (Goetzel et al., 2004; Kauppi et al., 2010; Kleinman et al., 2007).

Importantly, the magnitude of effect that medicines have in reducing absenteeism by conditions varies substantially. This is where evidence becomes less available. We find that pharmaceuticals have moderate to large effects on reducing absenteeism for mental health, asthma, and diabetes (Carls et al, 2012; Burton et al., 2003; Gifford et al., 2018).

Table 24 Effects of conditions on absenteeism and associated medicines effect

Conditions	Effect of condition on absenteeism	Impact of medicines on absenteeism
Hypertension	1.13-1.23 excess missed workdays per year (CDC, 2016) Hypertension is associated with absence of 0.4 percent (Goetzel et al., 2004)	1.7 less absenteeism days from increasing adherence (Carls et al, 2012)
Mental health	Workers with fair or poor mental health are estimated to have nearly 12 days of unplanned absences annually (Witters and Agrawal, 2022) Mental disorder was associated with 10.5 additional absent days (Graff et al., 2011) Depressed workers lose on average around 12 more days per year than non-depressed ones (Moreno-Mencia et al., 2025) Mental illness is associated with absence of 10.7 percent of working days (Goetzel et al., 2004) Mood disorders were associated with 4.68 additional absent days per year (Zhang et al., 2016)	22.8 percent less absenteeism over 2 years (Rost et al., 2004)
Asthma	Asthma was associated with approximately 9.3 excess days per year (Kauppi et al., 2010) Asthma is associated with absence of 5 percent of working days (Goetzel et al., 2004)	57 percent reduction in missed days from Inhaled terbutaline (Burton et al., 2003) 54 percent lower absenteeism from Zafirlukast Inhaled terbutaline (Burton et al., 2003) 2.9 less absenteeism days from increasing adherence (Carls et al, 2012)
COPD	COPD associated with a difference in sick days of 13.9 annually (Minov et al., 2024)	2.8 less absenteeism days from increasing adherence (Carls et al, 2012)
Diabetes	1.03-1.35 excess missed workdays per year (CDC, 2016) Diabetes is associated with absence of 0.8 percent of working days (Goetzel et al., 2004)	Absenteeism was five times (4.8) higher for the placebo group compared to treated group (Burton et al., 2003) 2.9 less absenteeism days from increasing adherence (Carls et al, 2012) A 10 percent increase in adherence yields 441 additional workdays per 1,000 people (Gifford et al., 2018)
Gout	Employees with gout had 4.56 more annual absence days across all categories of health-related work absence (Kleinman et al., 2007)	

Arthritis	Arthritis is associated with absence of 2.5 percent of working days (Goetzel et al., 2004)	
Cardiovascular disease (incl. heart failure)	Heart disease is associated with absence of 0.6 percent of working days (Goetzel et al., 2004) Heart disease was associated with 3.24 additional absent days per year (Zhang et al., 2016)	
Dyslipidaemia		2.9 less absenteeism days from increasing adherence (Carls et al, 2012)
Migraine	Migraine is associated with absence of 4.5 percent of working days (Goetzel et al., 2004)	0.64 hours saved (Burton et al., 2003)
Allergies	Rhinitis was associated with missed work time (absenteeism) of 1–4 percent (Vandenplas et al., 2008). Rhinitis was associated with ~3.1 excess days/year (Kauppi et al., 2010) Allergies is associated with absence of 3.4 percent of working days (Goetzel et al., 2004)	
IBS and stomach-bowel disorders	Bowel disorder was associated with 3.2 additional absent days per year (Zhang et al., 2016)	
Acute respiratory infection and influenza	Physician-diagnosed influenza was associated with absenteeism of 3.7–5.9 days/episode (Keech and Beardsworth, 2008) Respiratory disorders are associated with absence of 6.1 percent of working days (Goetzel et al., 2004)	1.35 days avoided or about 63 percent lower absenteeism (Burton et al., 2003)

Source: BERL analysis

Presenteeism

Presenteeism is broadly understood as a loss in work productivity due to an individual's health problems or a form of impairment. However, across the literature the exact scope of what is measured and how presenteeism is assessed varies significantly.

While there is sufficient evidence describing the effects of specific conditions on presenteeism, particularly for mental health, migraines, hypertension, and allergies, there is limited analysis on the effects that different pharmaceutical products have on reducing presenteeism (Table 25).

Three sources (Goetzel et al., 2004; Burton et al., 2004; Schultz et al., 2009) form the foundation of our review of presenteeism literature as it relates to different conditions, with further studies complementing and reinforcing these with similar findings (Iverson et al., 2010; Johns, G, 2009).

For our modelling, we have utilised Schultz et al., (2009), who also analyses Goetzel et al., (2004), as the primary basis for estimating the burden that different conditions have on presenteeism.[4] Deciding on the effects of medicines on presenteeism was inherently more complex and difficult given the very limited literature available on the subject. Each condition was assigned a broad category, either weak, medium, or strong, based on what literature was available and similar known or described effects.

Table 25 Effects of conditions on presenteeism and associated medicines effect

Conditions	Effect of conditions on presenteeism	Medicines impact on presenteeism
Hypertension	6.9 percent productivity loss due to presenteeism per employee per year (Goetzel et al., 2004) 33.4 percent reported output limitation among employees with hypertension (Burton et al., 2004) 35 percent of total condition cost attributable to presenteeism (Schultz et al., 2009) 3.02 annual lost workdays due to presenteeism among employees with high blood pressure (Iverson et al., 2010)	
Mental health	15.3 percent productivity loss due to presenteeism per employee per year for depression, sadness, or mental illness (Goetzel et al., 2004) 51.1 percent reported output limitation among employees with depression (Burton et al., 2004) 62 percent of total depression and anxiety cost attributable to presenteeism (Schultz et al., 2009). Mental disorder was associated with 8 days of reduced-qualitative functioning (Graaf et al., 2011) Depression was positively associated with presenteeism (ρ = 0.20) in a meta-analysis of 40 samples and 49,166 workers (Miraglia and Johns, 2015) Depression was associated with presenteeism effects of 7.96 workdays lost per year (Iverson et al., 2010)	36-percentage-point difference in work impairment for traditional antidepressants versus placebo, based on median work-impaired share of 45 percent in antidepressant groups vs 81 percent in placebo groups (Burton et al., 2003). 17 percent improvement in WPAI productivity scores with clonazepam for panic disorder and anxiety (Burton et al., 2003)

[4] Specifically, we lean on the “average of available estimates” presented in Table III of Schultz et al., (2009).

	Anxiety, depression, and emotional problems were associated with between 17.8 to 36.4 percent work impairment due to presenteeism (Collins et al., 2005, as cited by Johns, 2009)	
Asthma	11 percent productivity loss due to presenteeism per employee peryear (Goetzel et al., 2004) 35.6 percent reported output limitation among employees with asthma (Burton et al., 2004) 60 percent of total asthma cost attributable to presenteeism (Schultz et al., 2009) Employees with asthma lost 1.02 workdays annually due to presenteeism (Iverson et al., 2010)	Impairment while working dropped from 36.1 percent to 13.7 percent at 12 months (Canonica et al., 2025).
Diabetes	11.4 percent productivity loss due to presenteeism per employee per year (Goetzel et al., 2004) 35.3 percent reported output limitation among employees with diabetes (Burton et al., 2004) 45 percent of total diabetes cost attributable to presenteeism (Schultz et al., 2009).	
Arthritis	11.2 percent productivity loss due to presenteeism per employee per year for arthritis (Goetzel et al., 2004) 41.0 percent reported output limitation among employees with arthritis (Burton et al., 2004) 56 percent of total osteoarthritis cost attributable to presenteeism (Schultz et al., 2009).	
Cardiovascular disease	6.8 percent productivity loss due to presenteeism per employee per year for heart disease (Goetzel et al., 2004) 36.7 percent reported output limitation among employees with heart disease (Burton et al., 2004) 28 percent of total heart and circulatory disease cost attributable to presenteeism (Schultz et al., 2009).	
Dyslipidaemia	43 percent of total high cholesterol cost attributable to presenteeism (Schultz et al., 2009).	

Migraine	20.5 percent productivity loss due to presenteeism per employee per year for migraine/headache (Goetzel et al., 2004) 70 percent of total migraine cost attributable to presenteeism (Schultz et al., 2009) Employees with headaches (including migraine) lost 4.23 workdays annually due to presenteeism (Iverson et al., 2010)	0.60 hours presenteeism saved per migraine attack with triptans; sumatriptan reduced presenteeism from 0.94 to 0.38 days per patient and month in pretest-post-test studies Rrizatriptan model assumed 44 percent reduction in work loss due to migraine (Burton et al., 2003; Schultz et al., 2009). Sumatriptan was associated with individuals reporting that "they worked 56 percent fewer days with headache symptoms." (presenteeism). (Weaver et al., 2004). Sumatriptan was associated with 0.3 hours per week improvement in lost productivity (Miller et al., 2022).
Allergies	10.9 percent productivity loss due to presenteeism per employee per year for allergy (Goetzel et al., 2004) 34.7 percent reported output limitation among employees with allergy (Burton et al., 2004) 70 percent of total allergy cost attributable to presenteeism (Schultz et al., 2009) Employees with allergies and hay fever lost 2.07 workdays annually due to presenteeism (Iverson et al., 2010)	~5 percent increase in daily work output with nonsedating antihistamines; fexofenadine reduced overall work impairment by 7.1 percent at 120mg and 8.7 percent at 180mg, compared with 1.8 percent for placebo (Burton et al., 2003). Sedating antihistamine users had a 7.8 percent productivity reduction, while nonsedating antihistamine users were 5.2 percent more productive (Schultz et al., 2009).
IBS and stomach-bowel disorders	45.9 percent reported output limitation among employees with irritable bowel syndrome (Burton et al., 2004) 67 percent of total stomach and bowel disorder cost attributable to presenteeism (Schultz et al., 2009).	5.4 percent less presenteeism with tegaserod for IBS with constipation 6.3 percent less work loss overall, estimated as 2.5 hours per week (Schultz et al., 2009)

Source: BERL analysis

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Appendix C Literature review of health system benefits from medicines

Table 26 Literature review summary – Health system benefits from medicines

Study	Findings
Medication Adherence Leads to Lower Health Care Use and Costs Despite Increased Drug Spending	• Average benefit-cost ratios from adherence for this group were 8.6:1 for congestive heart failure, 13.5:1 for hypertension, 8.6:1 for diabetes, and 3.8:1 for dyslipidemia.
Medical Cost Offsets from Prescription Drug Utilization Among Medicare Beneficiaries	• Greater adherence leads to nine to 28 percent reduction in total healthcare costs (US) • May be three to six times greater savings for chronic conditions compared to CBO numbers.
Impact of Medication Adherence on Hospitalization Risk and Healthcare Cost	• Diabetes: 7.1:1 return on investment (ROI) • Hypercholesterolemia: 5.1:1 ROI • Hypertension: 4.0:1 ROI.
Investing in medication adherence improves health outcomes and health system efficiency: Adherence to medicines for diabetes, hypertension, and hyperlipidaemia	• US$3 to US$13 for every $1 spent on medication.
Consequences of cost barriers to prescriptions: cohort study in Aotearoa New Zealand	• Cost barriers to prescriptions associated with 34 percent higher hospitalisation risk and $32.4 million per year in avoidable hospital costs.

Adherence at 2 years with distribution of essential medicines at no charge: The CLEAN Meds randomized clinical trial	• 38 percent reduction in total healthcare costs.
The impact of pharmaceutical innovation on the burden of disease in Canada, 2000–2016	• Reduced Canadian DALYs in 2016 by 21 percent • Reduced years of life lost (YLLs) by 28 percent • Reduced years lived with disability (YLDs) by 3 percent • Expenditure in 2016 on drugs launched during 1986–2001 was US$6.57 billion, and those drugs reduced DALYs by 2.31 million, implying a cost of US$2,842 per DALY gained. • If no drugs had been launched during 1986–2001, average hospital length of stay in 2016 would have been about 16 percent higher.
How innovation drives health and growth in Europe: Assessing the Return on Investment of innovative medicines	• Every €1 invested in new medicines returns €5.67 to Europe • Use of newly approved medicines was associated with a reduction of: 1.83 million years of life lost before age 85 20.9 million hospital days across 29 European countries • €9 billion hospital savings.
Is newer always better? Re-evaluating the benefits of newer pharmaceuticals	• Lichtenberg findings are largely overstated. The newer drug offset esentially disappeared using fresher data and newer models

Source: Various sources

Appendix D Health outcomes and economic benefits

Table 27 Literature summary on health outcomes and economic benefits from medicines

Broad condition	Medicine referenced	Benefit	Time-horizon	Literature
Asthma	Asthma medicines	Absenteeism	Medium-term	Hakansson et al. (2022) show uncontrolled asthma increases sick leave risk by ~42 percent, implying reductions with effective treatment.
Asthma	Asthma medicines	Presenteeism	Medium-term	Canonica et al. (2025) show 62 percent and 74 percent reductions in work impairment at 12 and 24 months.
Diabetes	Diabetes	Presenteeism	Short-term	Mori et al. (2019) show improved glycaemic control and treatment optimisation reduce productivity impairment, though no single pooled percentage is reported.
Diabetes	Diabetes	Presenteeism	Short-term	Gifford et al. (2018) estimate that a 10 percent increase in adherence yields 441 additional workdays per 1,000 people.
General	N/A	Financial assistance supports improved adherence	Short-medium term	Norris et al. (2023) show that removing prescription co-payments reduces hospitalisation odds by around 30 percent in New Zealand, with a 57 reduction of a mental health admission. Complementing this, Hung et al. (2021) find that financial assistance improves medication adherence (approx. 7-18 percent) and persistence (approx. 47 percent), which is strongly associated with better disease control and fewer exacerbations requiring absence.
General	N/A	Sustained labour force participation	Medium-long term	Gruss et al. (2025) show that improvements in health among older individuals raise labour force participation by around 20 percentage points, increase weekly hours worked by ~6, boost productivity by ~30 percent, and raise total earnings by ~35 percent.
General	N/A	Caregiver burden	Medium term	Adelman et al. (2014) find that pharmacological treatment of patients produces mild to modest reductions in caregiver burden and improvements in caregiver well-being, suggesting indirect productivity gains for caregivers.
General	N/A	Sustained labour force participation	Long-term	Yuan et al. (2022) find that chronic conditions significantly reduce working capacity and late-life career participation, indicating that improved health (including through treatment access) supports continued labour force participation.

General	N/A	Adherence improves savings	Long-term	Cha et al. (2025) find that early and adaptive adherence-enhancing interventions produce the highest returns by sustaining adherence and slowing disease progression.
General	N/A	Ill health corresponds to labour force participation	Long-term	OBR (2023) estimate that ill health reduces labour force participation via a 28 percent coefficient, and that a ±25 percent change in ill health leads to around a ±1.5 percentage point change in participation, equivalent to roughly one million workers by 2073–74.
General	N/A	Health affects fiscal sustainability	Long-term	OBR (2024) Fiscal Risks and Sustainability Report shows that changes in population health materially affect GDP, labour supply, and public finances, with large long-run impacts on debt dynamics.
Mental health	Antidepressant	Adherence improves claims	Medium-term	Burton et al. (2007) show poor antidepressant adherence increases disability claims by 38.7 percent.
Mental health	ADHD	Absenteeism	Short-term	Spalding et al. (2021) found that in adults with "ADHD using oral psychostimulants, lower medication adherence was associated with greater absenteeism and indirect costs."
Mental health	Antipsychotic	Caregiver burden	Long-term	Gopal et al. (2017) show caregiving hours fall from 25.6 to 18.7 (~27 percent reduction) and the number of missed workdays drop substantially.
Mental health	ADHD and antipsychotic	Sustained labour force participation	Long term	Li et al. (2022) show a 10 percent reduction in long-term unemployment risk amongst adults with ADHD who use ADHD medications.
Mental health	Antidepressant	Presenteeism	Short-term	Jha et al. (2017) show large improvements in daily functioning and productivity linked to antidepressant treatment
Other chronic	Migraine	Absenteeism	Short-term	Autio et al. (2021) show a 73.9 percent reduction in migraine-related sick leave and 19.4 percent reduction in all-cause leave.

Source: Various

Appendix E Estimation of affected population by condition

Table 28 Estimation of affected population by condition and as a percentage of the labour force

Condition	Affected population	Affected pop. (15-64 years)	Affected pop. (65 years and over)	Estimate affected pop. in labour force (15-64 years)	Estimated affected pop. in labour force (65 years and over)	Estimated affected pop. in labour force (15 years and over)	Estimated affected pop. as percentage of labour force
Asthma	501,304	404,665	96,941	285,289	25,399	310,687	10.2
Hypertension	743,161	305,213	447,386	215,175	117,215	332,390	10.9
COPD (any medicine)	193,486	33,408	63,529	23,552	16,645	40,197	1.3
Heart failure	92,345	29,822	66,720	21,025	17,481	38,505	1.3
Ischaemic heart disease	197,883	82,324	118,079	58,039	30,937	88,975	2.9
Diabetes	268,241	147,679	122,496	104,114	32,094	136,208	4.5
Dyslipidaemia	501,304	207,396	301,070	146,214	78,880	225,094	7.4
Gout	211,075	110,452	104,507	77,869	27,381	105,249	3.5
Arthritis	870,685	419,400	461,218	295,677	120,839	416,516	13.7
Psychological distress / mental health	628,828	555,779	68,954	391,824	18,066	409,890	13.5

Source: BERL Analysis, Ministry of Health