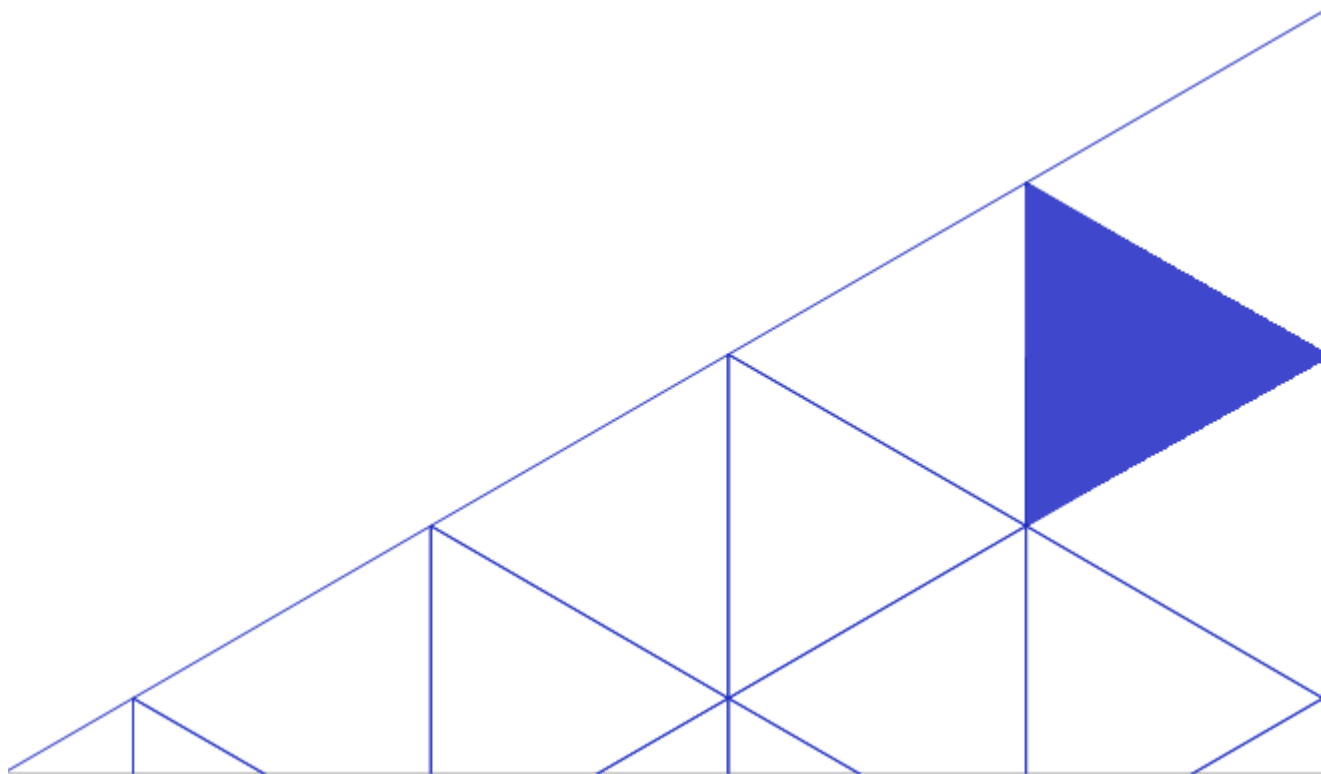




CYPRUS

► Fourth Report to the Health Insurance Organization

**Actuarial valuation of the General
Healthcare System as of 31 December 2023,
covering the period 2024–2033**





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► Foreword

The present report has been prepared in the framework of the Trust-in-Fund project between the Health Insurance Organization (HIO) and the International Labour Organization, entitled “Actuarial Support Services to the Health Insurance Organisation” (CYP/25/02/CYP).

The project aims at conducting actuarial valuation studies for assessing the financial sustainability of the Healthcare Insurance Fund (GHS Fund), using the ILO modelling approach designed for health insurance schemes, which is built on the principles of social security that underlie the ILO Conventions.

This report, which has been carried out as of 31 December 2023 in compliance with relevant international actuarial standards, presents the financial results of the fourth actuarial valuation of the GHS since its inception in June 2019, covering the period from 2024 to 2033.

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The ILO extends its gratitude to the executive directors of the HIO for their fruitful collaboration and contribution throughout the project.

► Executive summary

This report presents the results of the actuarial valuation of the GHS of the Republic of Cyprus as of 31 December 2023.

Projections have been made over a period of ten years, that is until 31 December 2033, as GHS provides short-term benefits highly influenced by the expansion of healthcare services and continuing advances in medical technology. The projection period is in line with actuarial practice for this kind of scheme.

The historical data provided by HIO for the GHS income and expenditure projection have been sufficient and reliable. Nonetheless, the present actuarial valuation is subject to a high degree of uncertainty due to relatively insufficient historical series of GHS expenditure data, which constrains the development of robust and stable actuarial assumptions across several key areas. Subsequent actuarial valuations are expected for continuous monitoring of the financial evolution of the GHS and to hold a higher degree of certainty as they will gradually be based on longer series of historical data.

Base scenario

Financial projections as shown in table ES.1, indicates that the GHS Fund is financially sustainable over the period 2024–2033 under the current GHS provisions, including the legislated schedule of contribution rates. The above projections assume no policy change in terms of adding new GHS healthcare services other than those which had been anticipated to be introduced at the time of writing this report. Therefore, considering the reserve,¹ contribution rates are assessed to be appropriate to sustain the scheme financially in the short term and medium term and thus ensuring the maintenance of a constantly positive reserve.

► **Table ES.1. Projected financial situation of GHS, 2024–2033 (in millions of euros)**

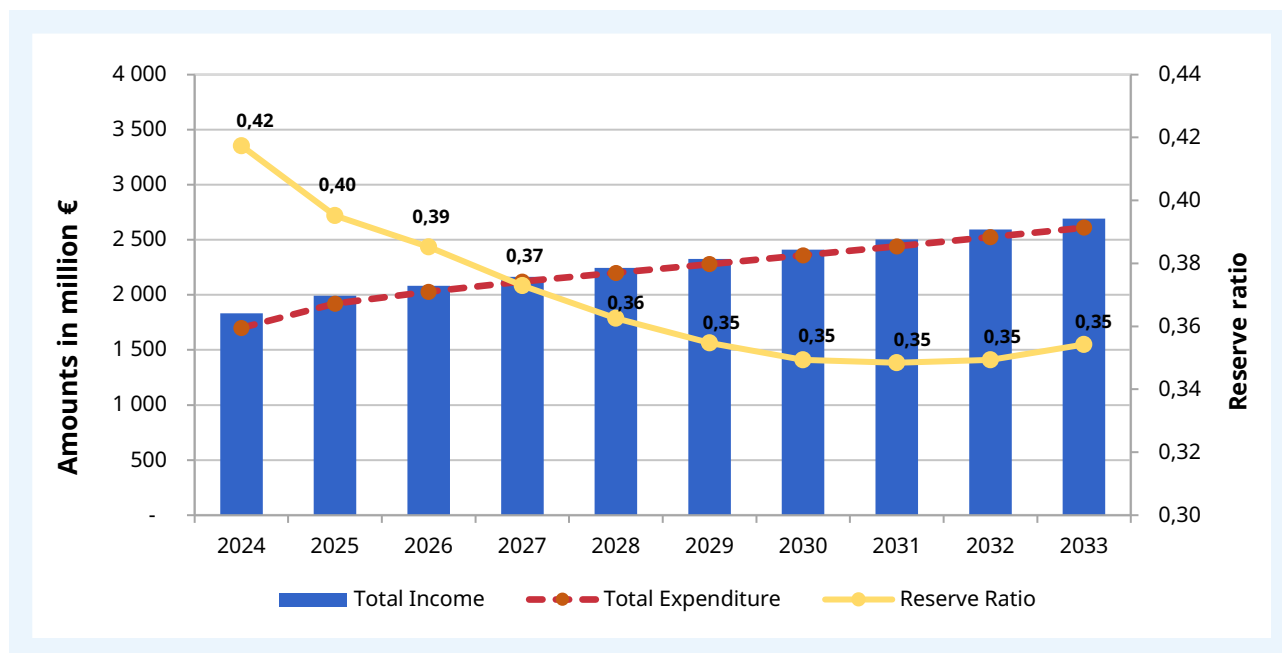
Year	2024 ¹	2025	2026	2027	2028	2029	2030	2031	2032	2033
Reserve (start of year)	594	709	759	781	791	797	808	824	850	882
Total GHS income	1 832	1 993	2 081	2 165	2 243	2 326	2 411	2 503	2 594	2 691
Total GHS benefits expenditure	1 699	1 921	2 028	2 121	2 199	2 279	2 358	2 440	2 524	2 610
Total other income	7	10	12	13	13	15	15	16	16	17
Total administrative expenses	25	32	43	47	51	51	52	53	54	55
Surplus/Deficit	115	50	22	10	6	11	16	26	32	43
Reserve (end of year)	709	759	781	791	797	808	824	850	882	925
Reserve ratio ²	0.42	0.40	0.39	0.37	0.36	0.35	0.35	0.35	0.35	0.35
Administrative expense ratio³ (%)	1.4	1.6	2.1	2.2	2.3	2.2	2.2	2.1	2.1	2.0
Total GHS benefits expenditure/ Nominal GDP (%)	5.1	5.5	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4

¹ The estimated financial figures for 2024 are derived from actual experience data. ² Reserve ratio refers to the level of reserve at the end of one year to the level of GHS expenditure for the same year. For example, a reserve ratio of 8.3% (one twelfth) indicates that the level of reserve covers one month's expenditure. ³ Administrative expense ratio refers to the ratio of the level of administrative expenses in any year to the total GHS income amount of the same year.

¹ For the purposes of the present report, reserve refers to the GHS Fund accumulated surplus.

Figure ES.1 shows graphically the evolution of total income, total expenditure and reserve ratio of the GHS for 2024–2033.

► **Figure ES.1. Total income, total expenditure and reserve ratio of the GHS, 2024–2033** (in million of euros)



It follows from table ES.1 and figure ES.1 that the projected reserve ratio remains positive throughout the projection period indicating the sufficiency of the annual GHS income to cover the annual GHS expenditure. Nevertheless, over the period 2024–2029, there is a downward trend in the reserve ratio. From 2029 to 2033, the reserve ratio is projected to remain stable at an adequate level, above four months' expenditure, reflecting broadly aligned growth rates between total GHS revenues and expenditures.

Sensitivity scenarios and tests

Since all projections have a degree of uncertainty, a variety of sensitivity scenarios and tests were carried out in order to measure the sensitivity of the projected financial position of the GHS Fund to future changes in the demographic and economic environments.

Three sensitivity scenarios were performed on the results of the actuarial valuation to examine their sensitivity to changes in the following set of assumptions or measures:

- economic adverse scenario, resulting to lower net migration, lower GDP growth rates, lower nominal wage increases, lower employment growth rates and lower labour-force participation rates from 2025 onwards, when compared to base scenario; and
- introduction of new healthcare services, which are not currently covered by the GHS legislation.
- GHS financial governance improvement: Activation of GHS institutional measures relating to its financial governance, which aim towards benefit cost containment, in accordance with the regulatory framework of the GHS.

In addition, individual sensitivity tests were performed on the results of the actuarial valuation to assess their sensitivity to changes, either more or less favourable for the GHS, in the following four key GHS variables which are subject to a relatively high degree of uncertainty:

- cost resulting from the introduction of new/innovative drugs;
- medical inflation: progressive growth to a higher or a lower level by 0.5 per cent over the projection period;
- increase or decrease in utilization rates (all services); and
- increase or decrease in inpatient utilization rates.

The above sensitivity scenarios and tests show that, even though the projected financial status of the GHS Fund is sensitive to the above measures and assumptions, the reserve remains constantly positive over the next decade, until 2033, securing the viability of the GHS Fund. Nevertheless, certain sensitivity scenarios and tests have greater financial impact than others, resulting to, by the end of 2033:

- Higher reserve covering more than five months' expenditure – namely the scenario for GHS financial governance improvement and the sensitivity tests of progressive decrease of medical inflation, decrease in utilization rates and decrease in the inpatient utilization rates.
- Lower reserve level covering between two and a half, and three months' expenditure – namely the economic adverse scenario and the sensitivity test of increase in the inpatient utilization rates.
- Lower reserve covering slightly above two months' expenditure – sensitivity test of increase in utilization rates.

Given the high degree of uncertainty associated with the projected financial results of the present actuarial valuation, as illustrated by sensitivity analyses, it is vital that the financial position of the GHS Fund is monitored closely and on a regular basis, so that, where necessary, corrective measures are taken in a timely manner.

► Abbreviations and acronyms

BE	benefits expenditure
CI	contribution income
CR	contribution rate
CPI	consumer price index
DRG	Diagnosis Related Group
GDP	gross domestic product
GEPS	Government Employees Pension Scheme
GHS	General Healthcare System
GSIS	General Social Insurance Scheme
HIO	Health Insurance Organization
FFS	Fee for Service
IAA	International Actuarial Association
ILO	International Labour Office/Organization
ISSA	International Social Security Association
PD	personal doctor
SHSO	organization managing public hospitals
SPS	Social Pension Scheme
GHS Fund	Healthcare Insurance Fund

► 1. Introduction

The present actuarial valuation report of the Cyprus General Healthcare System (GHS) has been carried out in compliance with the provisions of Part II, Article 4(2)(e) of the General Healthcare System Law of 2001 (N.89(I)/2001), which stipulates that the HIO has the authority to conduct actuarial valuations of the GHS on an annual basis. This report presents the financial situation of the GHS as of 31 December 2023 and the financial results of an ILO actuarial assessment for measuring the financial sustainability of the GHS up to 2033. The present actuarial valuation represents the fourth actuarial valuation of the GHS since its inception in June 2019.

Given the recent implementation of the GHS as of 1 June 2019 and 2020 for Phase I and Phase II respectively, the present actuarial valuation is subject to a high degree of uncertainty due to the relatively insufficient historical series of data, which constrains the development of robust and stable actuarial assumptions across several key areas. Therefore, a number of sensitivity scenarios and tests are undertaken in Chapter 8 of this report in order to evaluate the sensitivity of results under different evolution paths of key demographic, economic and GHS-specific assumptions. Continuous monitoring of the financial evolution of the GHS is paramount in this context, as well as the reconciliation of results with subsequent actuarial valuations. In particular, reconciliation of results facilitates the evaluation of the soundness and reasonableness of the actuarial assumptions and the necessary adjustments during future valuations.

1.1. Objectives of the actuarial valuation

The main objective of the present actuarial valuation is to evaluate the financial situation of the GHS in the short and medium term, within the framework of the principles of social security that underlie the ILO Conventions.

In particular, the present report aims to provide visibility on the financial sustainability of the GHS by reviewing the financial condition of GHS Fund in relation to its obligations arising from the implementation of the General Healthcare System Law of 2001. The main aims are to:

- review the current and projected financial situation of the GHS as of 31 December 2023;
- assess the medium-term financial viability of the GHS until 2033, assuming the legislation remains unchanged, and make recommendations on its financing; and
- assess the sensitivity of the medium-term projected financial position of the GHS to changes in demographic and economic environments, as well as changes in GHS-specific assumptions.

Communication of the results of actuarial valuations is very important to the HIO, enabling it to transmit a faithful picture of the financial position of the GHS and build members' trust, which has a direct impact on the solid financial and social sustainability of the GHS.

Finally, the present actuarial valuation has been undertaken in compliance with relevant international standards of actuarial practice, as promulgated by the International Actuarial Association (IAA) as well as the ISSA-ILO Guidelines on actuarial work for social security, thus aiming towards attaining the highest level of quality and transparency in actuarial practice for social security healthcare. The recommendations formulated therein are also in conformity with the relevant social security standards of the ILO.

1.2. Scope of the report

The present report is structured as follows:

- Chapter 2 gives an overview of the provisions of the GHS.
- Chapter 3 describes the methodologies used to project the income and expenditure of the GHS as well as relevant financial sustainability indicators.
- Chapter 4 presents the demographic, economic and labour market framework of the actuarial valuation.
- Chapter 5 shows the past experience of the GHS and the assumptions made for the future based on that observed past experience.
- Chapter 6 presents the GHS projection results under the base scenario.
- Chapter 7 presents the reconciliation of the results with those presented in the previous actuarial valuation.
- Chapter 8 presents sensitivity scenarios and tests, which assess the sensitivity of base scenario projection results to future changes in the demographic and economic environments, as well as changes in GHS-specific assumptions.
- Chapter 9 presents the conclusions and recommendations.
- Chapter 10 presents the actuarial opinion of the present valuation.

► 2. Description of the General Healthcare System provisions

This chapter gives an overview of the GHS provisions. A more complete description is provided in Annex 1.

2.1. Covered population

The GHS covers the following categories of beneficiaries:

- Citizens of the Republic of Cyprus who have their ordinary residence in the areas controlled by the Government of the Republic of Cyprus.
- European Union citizens who have their ordinary residence and either work or have acquired the right of permanent residence in the Republic of Cyprus.
- Third-country citizens who have their ordinary residence in the Republic of Cyprus and have acquired legally either the right of permanent residence or the right to equal treatment in the sectors of social insurance, according to the provisions of the Cyprus National Law.
- Other categories (such as refugees) under certain conditions.
- Persons who are family members of the first two points or persons who are family members of the third point and who have also acquired legally the right of permanent residence.

Family members are the spouse of the beneficiary and the children under the age of 21, or over the age of 21 who are dependent on them or their spouse, as determined by Regulations.

2.2. Healthcare services under GHS

All beneficiaries have access to the same healthcare services covered by the GHS. The healthcare services covered are described in table 2.1.

► **Table 2.1. Healthcare services covered by GHS by implementation date**

Date implemented	Healthcare service
1 June 2019	Personal doctors for adults and children
	Specialist doctors for outpatient care
	Pharmacies and pharmaceuticals for outpatient care (Phase I Drugs: Generics/Off Patent and MeToo)
	Laboratories for outpatient care
1 June 2020	Inpatient care
1 September 2020	Accident and emergency care, ambulance services and Phase II Drugs (Innovative/high-cost Drugs)
1 December 2020	Dentists for preventive dental care
	Nurses and allied health professionals: physiotherapists, clinical psychologists, clinical dieticians, speech therapists, occupational therapists for outpatient care
1 October 2021	Midwives
1 January 2022	Palliative care
1 January 2023	Institutional rehabilitation services
1 November 2023	Allied health professionals: podologists for outpatient care

2.3. Financing approach

For the implementation of the GHS, a GHS Fund has been established for the purpose of gathering the relevant contributions, and from which all payments to providers of healthcare services are made. The GHS Fund is administered by the Health Insurance Organization (HIO).

The HIO sets an individual global budget for each segment of healthcare following consultations with the respective representatives of the healthcare providers. The total global budget corresponds to the annual expenditure for healthcare services covered by the GHS. In any given financial year, the actual expenditure for any segment of healthcare within the framework of the GHS cannot exceed the predetermined global budget, irrespective of the volume of services provided. This practice aims at containing the cost and ensuring the sustainability of the scheme. The annual global budget of each healthcare segment is allocated to the 12 months of the calendar year.

2.4. Source of funding

The GHS Fund revenues come from contributions, co-payments, personal contributions (contribution I)², donations and legacies, investment income from assets of the HIO and any other income accrued from the activities of the HIO. The main GHS source of financing is contributions.

2.5. Reimbursement methods

The HIO reimburses providers through various reimbursement methods; these are:

1. **Price list (fixed fee):** Reimbursement is calculated based on the list price of each item for the specific date.
2. **Point system:** Reimbursement is calculated based on the number of points of each activity in a group, the total claimed number of points per group and the group budget of each month. Point values are calculated monthly, based on the monthly budget and the total number of points for the specific month. The HIO can define minimum or maximum amounts for point values. Claims reimbursements are based on the calculated point value of the specific group.
3. **Capitation reimbursement:** Reimbursement is not claim-based. It concerns the personal doctors and the services they offer to beneficiaries registered in their list. It is calculated based on the number of days each beneficiary is registered to a personal doctor list according to a daily rate corresponding to the age group of the beneficiary.
4. **Performance reimbursement:** Implemented in 2022 and aiming at improving quality of services. The reimbursement amount for each provider is calculated based on various key performance indicators (KPIs).
5. **Inpatient diagnosis related group (DRG) point system reimbursement:** Inpatient services are reimbursed per case based on a DRG reimbursement method. The DRG cases are separated into normal, specialised and births. The Standard Base Rates (point value) which apply for each hospital for normal and specialised cases, are determined based on the score of each hospital on specific qualitative criteria. The Standard Base Rates for specialised cases are higher than the Standard Base Rates for normal cases. The Base Rate for all birth cases is fixed and it is the same for all hospitals. A pre-agreed number of points is defined for each hospital for normal and for specialised cases, up to which no discount factors apply on each hospital's respective Standard

² Personal Contribution I will be paid in case a beneficiary goes directly to an outpatient specialist without a referral. Some exemptions are applied, as per section A1.5.2 of Annex 1.

Base Rates. In case a hospital exceeds its pre-agreed number of points, discount factors apply in order not to exceed the global budget.

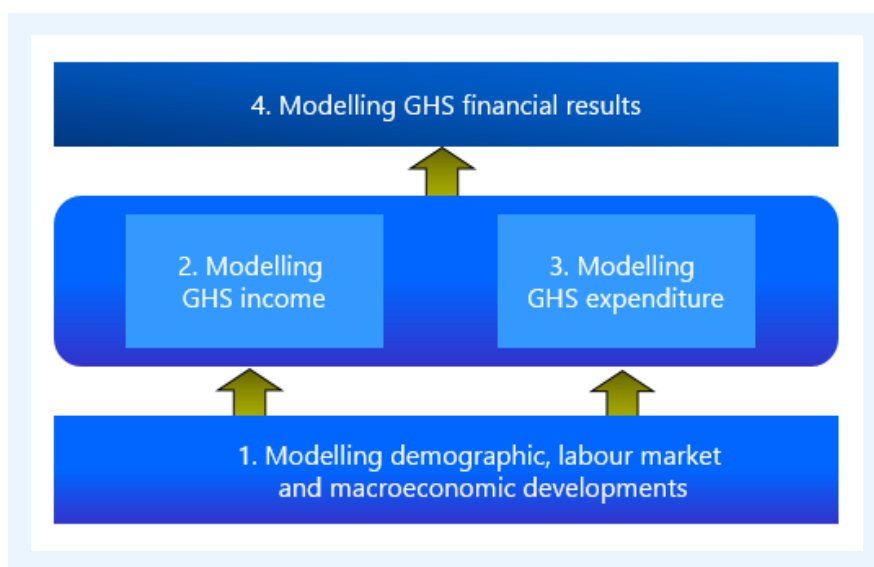
6. **Fixed annual amount:** A&E Department for public hospitals and ambulances of public hospitals.

► 3. Projection methodologies

The present actuarial valuation of the GHS involves cash-flow projections of its revenue and expenditures over a medium term, until 2033, so as to be able to estimate changes in the reserve. These changes vary from one year to the next as a function of the difference between the GHS revenue and expenditures. The actuarial projections in this report are based on: (i) the current legal provisions and governance of the GHS, such as eligible beneficiary population, healthcare services covered, financing approach and reimbursement methods; (ii) data regarding the starting point of the projections including data on the GHS contributors and registered beneficiaries; (iii) actual past experience and trends in the GHS contributory income and expenditure of each GHS healthcare service; and (iv) assumptions regarding future demographic and economic experience, as well as scheme-specific assumptions such as utilization rates and unit costs.

Figure 3.1 shows graphically the methodological modelling framework used in this actuarial valuation. Details of that modelling framework are provided in Annex 2.

► **Figure 3.1. Actuarial methodological modelling framework**



It follows from figure 3.1 that the actuarial methodological modelling framework has the following four components:

1. The demographic, labour market and macroeconomic component that provides a projection of the population, labour force, employment levels and macroeconomic data that are needed as input for the modelling of the GHS expenditure and revenues.
2. The GHS income component that calculates GHS contribution income, other GHS income and other items treated as GHS income as described in section 3.1. GHS contribution income is calculated by projecting the assessment base for contributions, resulting from working income of the employed population and pension income of the pensioner population, using the economic and demographic data supplied by the above component together with scheme-specific assumptions, including the coverage of the contributing employed population.
3. The GHS expenditure component that projects expenditure in various GHS healthcare services, on the basis of the projection of the eligible beneficiary population and scheme-specific assumptions of future utilization and cost developments, as well as GHS administrative expenditure.

4. The GHS financial results component that calculates the annual balance of GHS income and expenditure and produces the indicators used for assessing the GHS financial sustainability, as well as determining the adequacy of current contribution rates.

3.1. Methodology for modelling GHS income

The revenue of the GHS includes contribution income, other income and other items treated as income. The GHS contribution income, which represents the largest share of GHS income, results from working income of the employed population and pension income of the pensioner population. In particular, it is based on the following sources of income:

- Earnings of employees: salaried and self-employed persons. Employed and self-employed persons are the General Social Insurance Scheme (GSIS) contributors.
- GSIS pensions.
- Other pensions, such as Government Employees Pension Scheme (GEPS) and Social Pension Scheme (SPS).

Other GHS income includes revenues from rental income, interest on cash deposits, dividends of shares, other investment income sources, other taxable income related to GHS as well as EU pensioners' and tourists' medical expenses, all of which are of lesser financial importance.

Other items treated as GHS income include co-payments, personal contribution I (see Annex 1) and discounts/clawbacks from pharmaceutical companies.

For each year in the projection period 2024–2033, the GHS contribution income (CI) for each source of contributory income is projected by multiplying the legislated contribution rate (CR) by the size of the contributing population and its corresponding assessment base for the payment of contributions. The assessment base is the total amount of income subject to contributions.

$$CI_t = CR_t * \text{Contributing Population}_t * \text{Assessment Base}_t$$

The total GHS contribution income (CI) of all sources of income is the summation of each income source's CI.

The legislated contribution rate (CR) of each source of income is presented in table 3.1.

► **Table 3.1. Legislated contribution rates (percentages)**

Source of Income	Contributor			Total
	Individual	Employer	State	
Employed				
Salaried employees	2.65	2.90	4.70	10.25
Self-employed	4.00	–	4.70	8.70
Pensioners				
GSIS, GEPS, other	2.65	–	4.70	7.35
Other income				
Rent, interest, dividends, other	2.65	–	–	2.65

The contributing population consists of the employed population, salaried and self-employed persons, as well as the pensioner population.

The assessment base represents the total amount of earnings of employed persons and the total amount of pension income of the pensioner population, which are subject to contribution payments.

Figure 3.2 presents the methodological modelling approach used for calculating the GHS contribution income, resulting from GSIS insurable earnings of employed persons and GSIS pension income of the pensioner population, using the ILO actuarial pension model, which is currently used for actuarial valuation purposes of the GSIS.

► **Figure 3.2. Methodology: GHS contribution income from GSIS income sources**

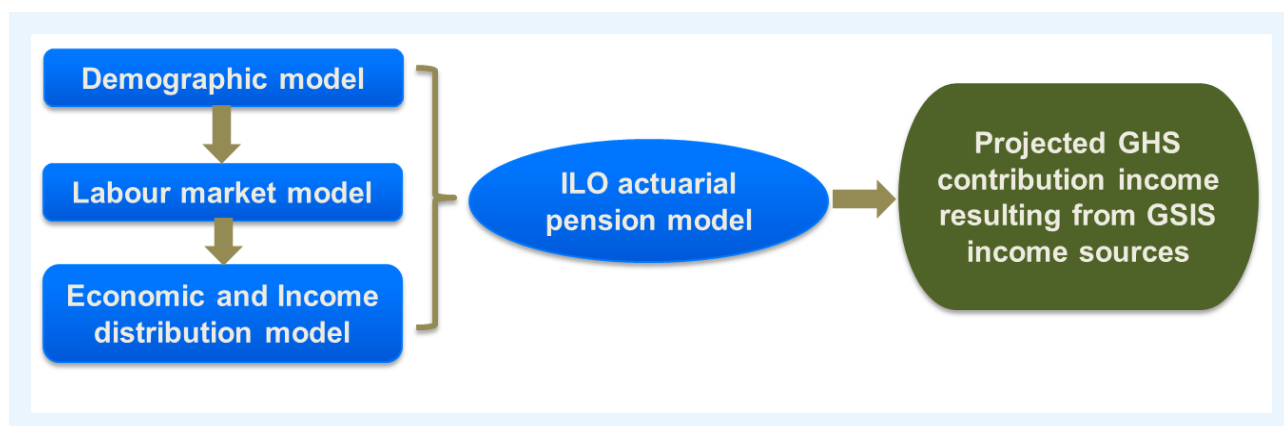
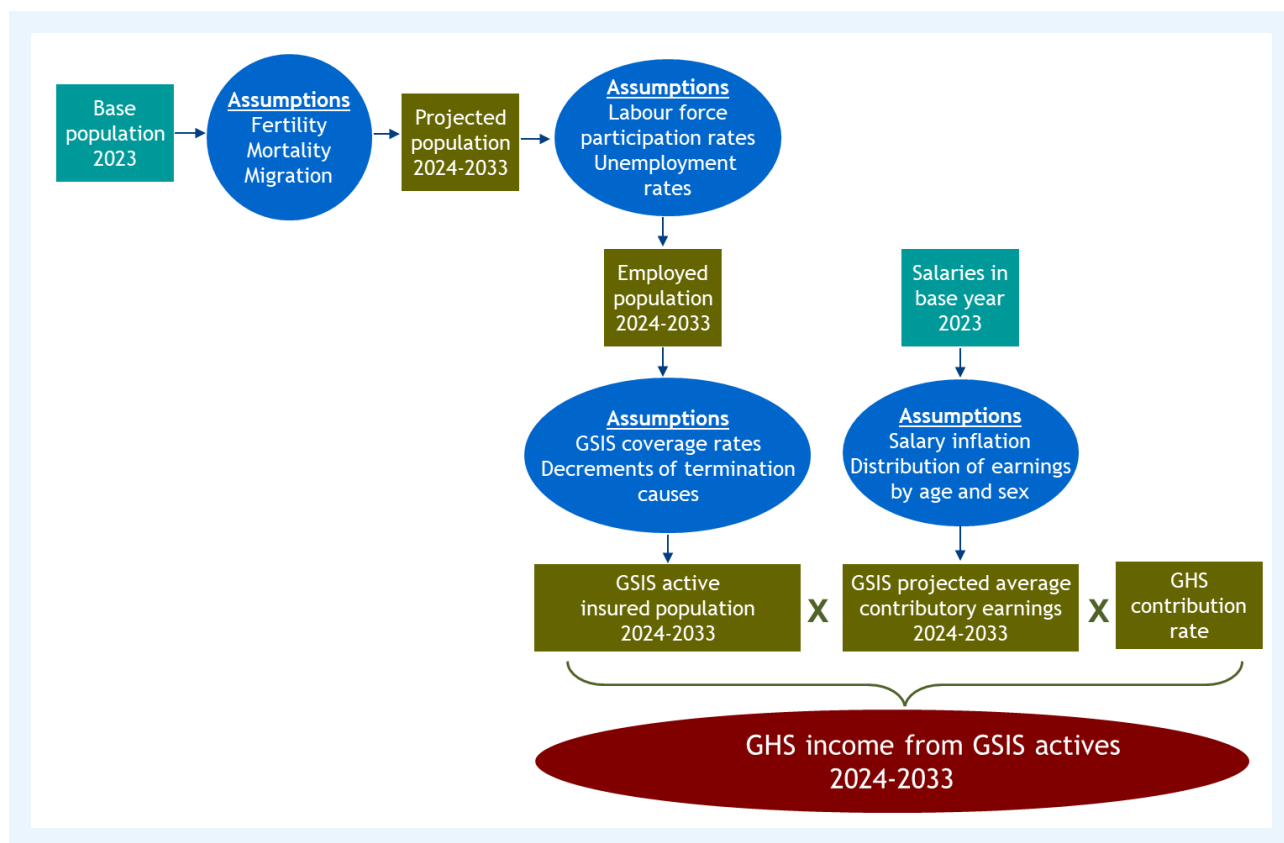


Figure 3.3 presents the methodology used for calculating the GHS income from the GSIS active insured population, while figure 3.4 presents the methodology used for calculating the GHS income from the GSIS pensioner population.

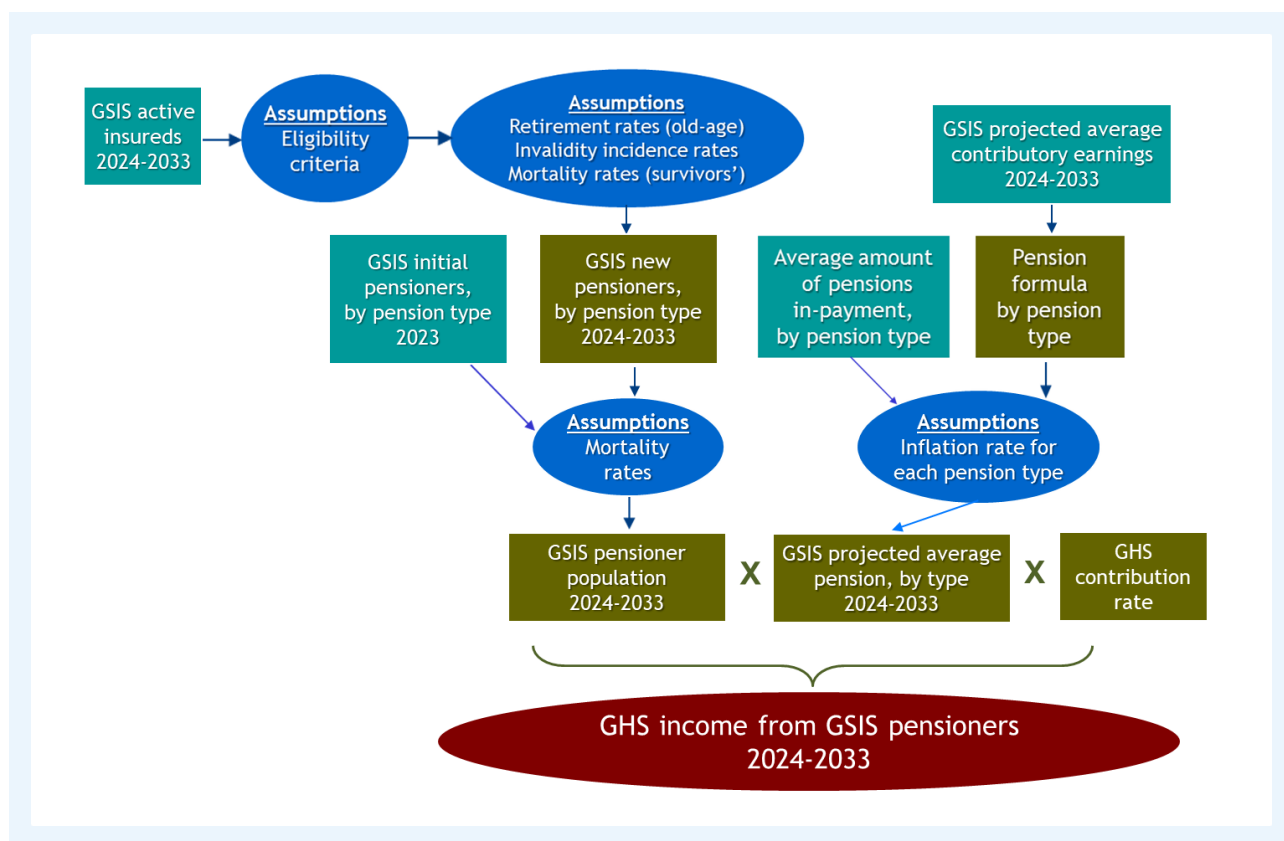
► **Figure 3.3. Methodology regarding GHS income from GSIS contributing population**



As shown in figure 3.3, the demographic projections of the active insured population are derived from the following:

- The total population is projected starting with the actual population by age and gender, and projecting that population over the next decade using appropriate assumptions concerning fertility, mortality and migration.
- Labour force participation rates are applied to the total population to obtain the labour force, distributed by age and gender.
- The labour force is then separated into employed and unemployed persons.
- Finally, GHS active contributors, which in essence are the GSIS active contributors, are projected by using appropriate assumptions about the rate of coverage of the employed population under the GSIS and annual decrements of termination causes under the cohort method.

► **Figure 3.4. Methodology regarding GHS income from the GSIS pensioner population**



As illustrated in figure 3.4, in order to determine the projected number of GSIS pensioners, by type of pension, the following income development process is applied:

- Starting with the number of active insured persons and using past service records, it is determined whether these persons are eligible for the various types of pensions.
- Once this potential population of beneficiaries is established, a probability of occurrence of the risk involved (type of benefit) is applied to the eligible population in order to determine the number of new pensioners that will emerge each year.

The probability of occurrence of the benefit varies according to the benefit involved. It may be:

- retirement rates for determining statutory pensions;
- invalidity incidence rate for determining invalidity pensions; and
- mortality rates for determining survivors' pensions.

These new GSIS pensioners are then projected into the future using survival rates.

The GHS income resulting from pension income other than the GSIS is projected by multiplying the projected total pension amount for each source, such as the GEPS and SPS, by the relevant contribution rate, using pension models other than ILO models.

The GHS income resulting from other income is projected by multiplying the projected income from each of the above sources by the corresponding legislated contribution rate.

The GHS investment income is projected by multiplying each year the GHS Fund accumulated surplus by the corresponding year's interest rate.

Finally, the GHS income resulting from other items treated as income for co-payments and contribution I is projected by multiplying the projected utilization with the corresponding co-payment and contribution I amounts. Discounts and clawbacks from pharmaceutical companies are projected based on the development of expenditure on pharmaceuticals.

3.2. Methodology for modelling the GHS expenditure

The expenditure of the GHS consists of the benefit expenditure and administrative costs. The benefit expenditure represents the largest share of GHS expenditure, while administration cost is only tiny fraction of total GHS expenditure.

The projection of future benefit expenditure implies the estimation of the covered beneficiary population, which is different from the contributing population. The covered beneficiary population includes all persons who are entitled to benefits, who according to the GHS legislation also includes people who do not contribute, such as covered dependants and other inactive people such as the unemployed.

For each year in the projection period 2024–2033, the benefits expenditure (BE) for each healthcare service is projected by multiplying the covered beneficiary population (CovPop), i.e., the number of potential beneficiaries, by a utilization rate and the average unit cost.

$$BE_t = CovPop_t * Utilization\ rate_t * Average\ Unit\ Cost_t$$

The total benefit expenditure of all GHS healthcare services is the summation of each healthcare service BE.

Utilization rate_t is the number of invoices per capita (1 in case of capitation reimbursement).

Average Unit Cost_t is the average cost weight (average number of points) multiplied by the average point value.

Administrative expenditure consists of staff costs and non-staff costs and is projected using factors which reflect wages and prices respectively.

3.2.1. GHS healthcare services modelled

Following is a list of GHS healthcare services modelled using the ILO/Health modelling framework:

- Personal doctors for adults and children;
- Specialist doctors for outpatient care;
- Dentists, nurses, midwives and allied health professionals for outpatient care;
- Inpatient care;
- Pharmacies and pharmaceuticals for outpatient care;
- Laboratories for outpatient care;
- Accident & emergency care and ambulance services; and
- Palliative care and rehabilitation services.

3.2.2. Principles of modelling methodology

There is a high degree of uncertainty when projecting GHS utilization rates and unit costs, and ultimately healthcare benefit expenditure, due to the interaction of demand-side factors such as morbidity and national income, and supply-side factors such as human resource and infrastructure inputs, as well as the institutional features of GHS which include global budget, gatekeeping, reimbursement methods and financing. In addition, exogenous factors such as behaviour, technological advances, socio-economic developments and climate change, which are also determinants of healthcare benefit expenditure, are most often unpredictable, and thus increase further the level of uncertainty in modelling healthcare benefit expenditure.

In view of the above uncertainties, projections of healthcare expenditure are made for a medium-term projection period. In particular, for the purposes of this GHS actuarial valuation, a projection period of 10 years (2024–2033) is selected.

Furthermore, in order to achieve a valid assessment of the future financial development of the GHS, in addition to the base scenario projections, a number of alternative sensitivity scenarios and tests were undertaken (see Chapter 8). These scenarios and tests were chosen in order to reflect the uncertainty of assumptions regarding key parameters that describe the GHS utilization and cost of healthcare services, as well as to better understand the interactions between the various factors affecting healthcare expenditure, as mentioned above (demand-side factors, supply-side factors, institutional features of GHS and exogenous factors).

3.3. Indicators to assess financial sustainability

In order to examine the financial sustainability of the GHS, two financial indicators are considered and estimated in this actuarial valuation. They are:

- the reserve amount at each year end; and
- the reserve ratio: the ratio of the level of reserve at the end of one year to the level of expenditures for the same year.

Minimum target levels of reserve ratio, based on benchmarking data from other jurisdictions, are typically set at least two months (16.7 per cent) of annual healthcare expenditure for mature, well-established social security healthcare programmes. The GHS is at its early stages of maturity and over the next few years, new services are expected to be introduced and new providers are expected to be affiliated with the GHS. Therefore, it is reasonable and appropriate, during the early years of GHS, to maintain a reserve ratio of more than two months of annual healthcare expenditure (16.7 per cent).

Such a higher level in the short-term is necessary, primarily to cover potential annual deficits which are anticipated to incur from the above introduction of new services/providers.

Furthermore, given the high degree of uncertainty associated with the projected financial results of the present actuarial valuation, as illustrated by sensitivity analyses (see Chapter 8), in the context of sound financial governance of the GHS, HIO should aim to maintain an adequate reserve ratio throughout the projection period 2024–2033, taking into account:

- the HIO Board of Directors' desired level of reserve, necessary to safeguard the GHS against potential future financial risks; and
- the ability of the level of reserve, at that time, to provide sufficient "buffer" to face events of sudden adverse economic and morbidity developments that could disrupt the financial sustainability of the GHS Fund.

► 4. Demographic, economic and labour market framework

The actuarial valuation of the GHS must be positioned in the specific demographic and economic context of Cyprus. This requires making assumptions on the demographic and economic environment as well as a certain number of scheme-specific assumptions. This chapter presents the main demographic and economic assumptions made for the purpose of conducting the present actuarial valuation. Chapter 5, Annex 3 and Annex 4 present the scheme-specific assumptions used in this valuation.

It should be noted that the demographic and economic framework used as a basis for the present actuarial valuation concern both the GHS income and expenditure and are limited to the government-controlled area of Cyprus, as the GHS covers almost exclusively persons in that area.

Since the main aim of this valuation is to review the GHS financial position until 2033, the assumptions should reflect a medium-term perspective. The assumptions take into account historical trends, the present economic environment and GHS situation as well as likely future trends.

The determination of demographic and economic assumptions relied on historical demographic and labour market data mainly obtained from the Cyprus Statistical Service and macroeconomic data mainly obtained from the Ministry of Finance of Cyprus. The opinions and forecasts of international organizations, such as the European Commission with regards to economic assumptions and Eurostat with regards to demographic assumptions were also taken into account.

These assumptions reflect the Actuary's best estimates of demographic and economic changes. They were chosen to be, independently and in aggregate, reasonable and appropriate, taking into account certain interrelationships between them.

Although assumptions are determined in a reasonable manner, there will be differences between the future reality and assumptions made. These differences may have a positive or negative impact on the financial position of the GHS, compared with the results of this actuarial valuation. Nevertheless, they will be analysed and taken into account in subsequent actuarial valuations.

4.1. Demographic framework

A projection of the general population of the country is the basis for determining the number of contributors and beneficiaries. The projection begins with the latest available statistical data on population estimated by the Statistical Service of Cyprus as at 31 December 2023, to which the assumptions on the future development of fertility, mortality and migration are applied. For the year 2023, fertility, mortality and migration rates were derived from aggregate estimates for the number of births, deaths and net migrants, as provided by the Statistical Service of Cyprus, whereas for preceding years, up to and including 2021, explicit data on the above variables were available.

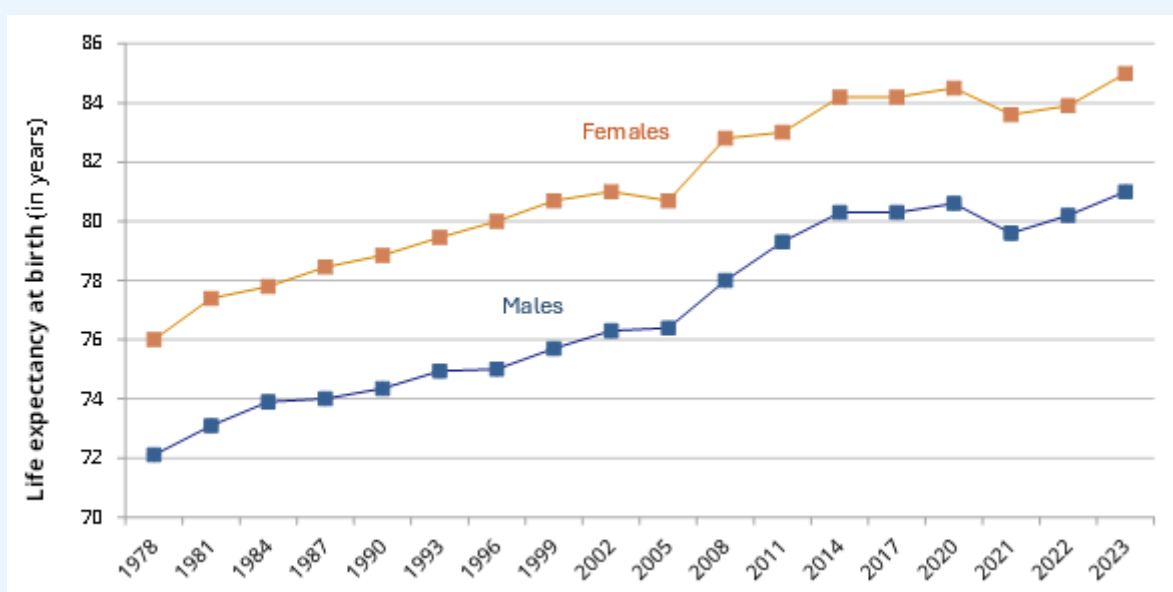
The current population structure strongly influences the results of the projections for the coming years. The age distribution of the starting population shows an increasing ageing of the population in Cyprus, as is the case in many other developed countries.

4.1.1. Life expectancy

The first cause of the ageing of the population in Cyprus is the large reduction in age-specific mortality rates. This can be best measured by the increase in life expectancy.

As figure 4.1 indicates, male life expectancy at birth increased by 12.3 per cent between 1978 and 2023, rising from 72.1 to 81.0 years. For females, life expectancy at birth increased from 76.0 to 85.0 years during the same period, representing an increase of 11.8 per cent. The increase in life expectancy has been particularly important over the decade 2005–2014 for both males and females. Over the period 2015–2022, the life expectancy remained relatively stable, followed by a significant increase from 2022 to 2023.

► **Figure 4.1. Historical life expectancies at birth, 1978–2023**

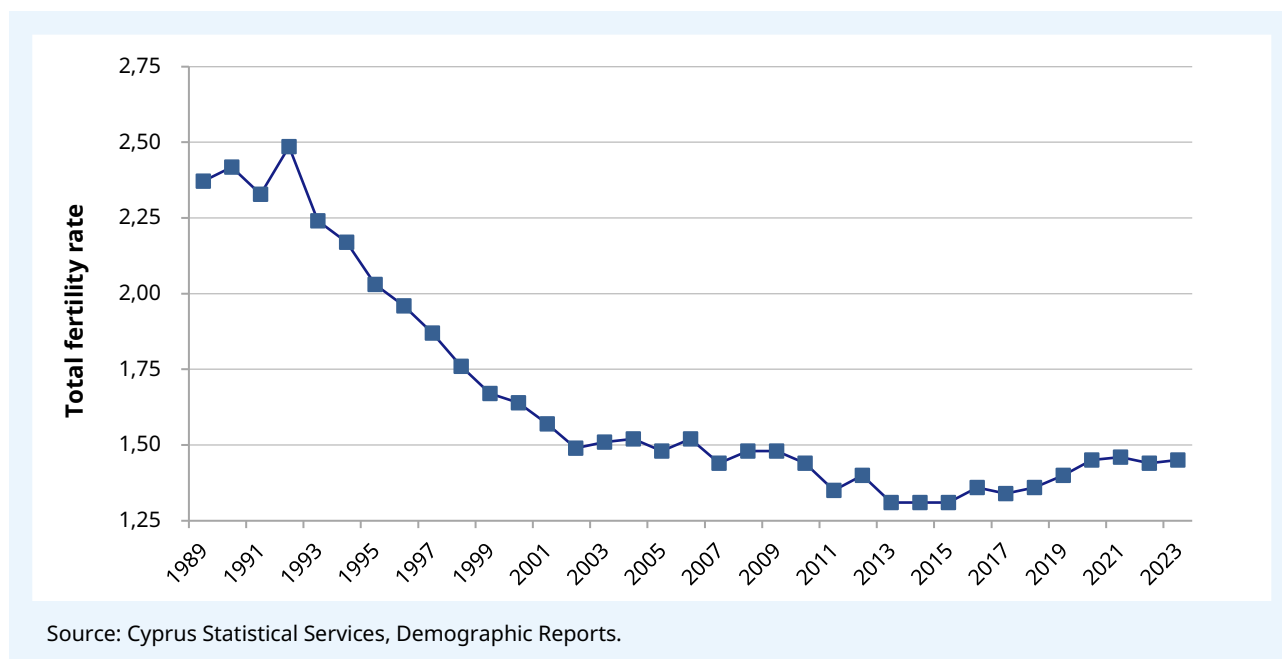


Source: Cyprus Statistical Services, Demographic Reports.

For the present valuation, mortality rates are in line with Eurostat's mortality rates. For the determination of future mortality rates, it is assumed that mortality improvements continue in the future, but at a slower pace than in the past. In particular, it is assumed that the life expectancies at birth observed in 2023, which were 81.0 for males and 85.0 for females, will gradually increase to 82.5 for males and 86.4 for females in 2033. Finally, the gap between the life expectancy of men and women is expected to slightly decrease from 4.0 years in 2023 to 3.9 years in 2033. Sample mortality rates can be found in Annex 3.

4.1.2. Fertility rate

The ageing of the population is also significantly driven by the sharp decline in birth rates observed since the 1990s, followed by persistently low fertility levels thereafter. In particular, the total fertility rate in Cyprus has decreased sharply from an average level of 2.5 children per woman in the early 1990s to a level below 1.4 from 2011 onwards, remaining at this level until 2018. A modest increase was observed in subsequent years, with the total fertility rate rising to 1.40 in 2019 and 1.45 in 2020, and stabilizing at around 1.45 through to 2023. In particular, the total fertility rate has been 1.34 on average for the years 2011–2018 while for the years 2019–2023 average fertility rate increased to 1.44. Figure 4.2 illustrates the historical total fertility rates for the period from 1990 to 2023.

► **Figure 4.2. Historical total fertility rates, 1990–2023**

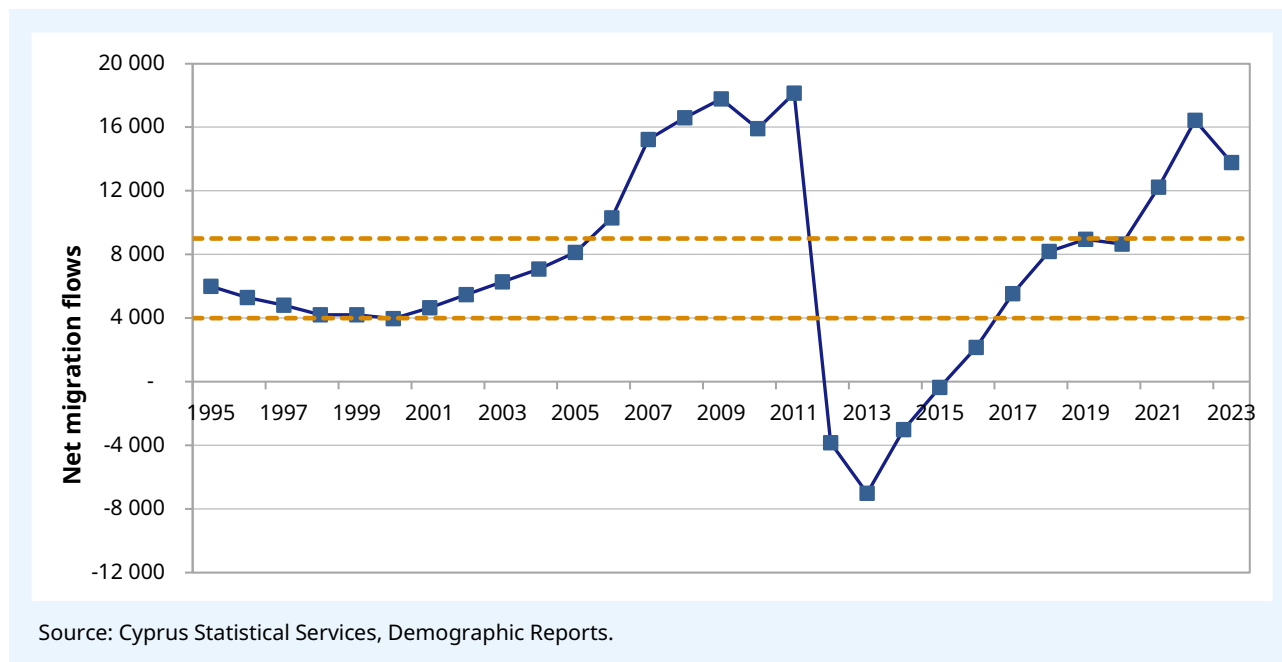
The overall significant decrease in the total fertility rate in the 1990s occurred primarily as a result of changes in a number of social and economic factors. It is unlikely that fertility rates will return to historical levels in the absence of significant societal changes.

In the present valuation, the total fertility rate is estimated at 1.45 children per woman in 2024, increasing gradually to 1.47 in 2033.

4.1.3. Migration

Net migration in Cyprus (i.e., the excess of immigration over emigration) has been positive and relatively stable over the period 1995–2005, fluctuating between 4,000 and 9,000 net migrants per year (see figure 4.3). During the period 2006–2011, the number of net migrants was exceptionally high, reaching 18,142 in 2011. In years 2012–2015, the number of net migrants dropped significantly and became negative, primarily due to labour oversupply in certain sectors of the economy resulting from the economic crisis. In years 2016–2019, net migration experienced a strong increase, reaching 8,955 in 2019. This increase was slightly reversed in 2020, where net migration dropped to 8,650 as a result of the COVID-19 pandemic. In 2021 and 2022, net migration experienced a robust upward trend, reaching 12,229 and 16,440 respectively. In 2023, net migration remained elevated, though it slightly declined to 13,782 from its previous year's peak.

Net migration is projected to gradually decline from 11,100 in 2024 to 9,000 by 2033, while remaining at relatively elevated levels throughout the period. On average, net migration is estimated at approximately 9,810 over the period 2024–2033.

► **Figure 4.3. Historical net migration flows, 1995–2023**

4.1.4. Population

According to the above assumptions, the general population of Cyprus is projected to increase from its present level of 966,365 persons in 2023 to 1,086,472 in 2033.

Table 4.1 shows how the percentage distribution of population by three age groups (0–14, 15–64 and 65+) is developed throughout the projection period of 2024 to 2033, as well as the old-age dependency ratio, i.e., the ratio of the number of people aged 65 and over to those aged 15–64. This ratio, which provides a demographic measure of population ageing, is projected to increase continuously from 27 per cent in 2024 to 32 per cent in 2033. In other words, in 2033, it is expected that Cyprus will have almost three working-age people for every person aged 65 and over.

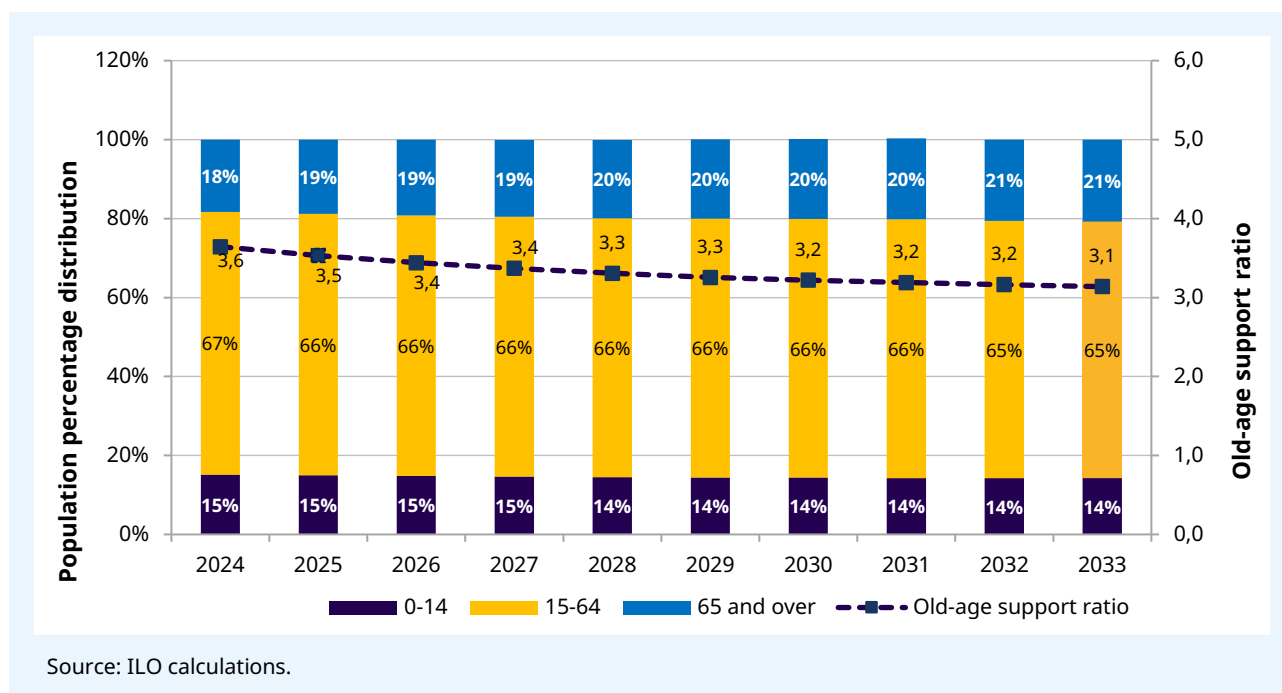
► **Table 4.1. Projection of the percentage distribution of population by age groups (0–14, 15–64 and 65+), 2024–2033 (percentages)**

Year	Number of persons by age group				Old-age dependency ratio (%)
	0–14	15–64	65 and over	Total	
2024	15	67	18	100	27
2025	15	66	19	100	28
2026	15	66	19	100	29
2027	15	66	19	100	30
2028	14	66	20	100	30
2029	14	66	20	100	31
2030	14	66	20	100	31
2031	14	66	20	100	31
2032	14	65	21	100	32
2033	14	65	21	100	32

Figure 4.4 shows the projected percentage distribution of population by the age groups (0–14, 15–64 and 65+) and the old-age support ratio, which measures how many people there are of working age 15–64 relative to the number of working age 65 and over.

A decrease in the old-age support ratio directly affects the utilization rates as an increase in the aged population puts pressure for an increase in the number of claims.

► **Figure 4.4. Projected population percentage distribution and old-age support ratio, 2024–2033**



4.2. Economic and Labour market framework

The general economic developments and the evolution of the labour market directly influence the financial development of the GHS, affecting both GHS income and expenditure. The evolution of the gross domestic product, its primary factor income distribution, labour productivity, employment and unemployment, wages, inflation and interest rates have direct and indirect impacts on the projected revenue and expenditure of the GHS.

4.2.1. Economic growth

During the 1980s, the Cyprus economy grew at an average annual (real) rate of 6.3 per cent, while during the 1990s it grew at a much lower rate of 4.1 per cent. Over the period 2001–2008, real GDP grew at an average rate of 4.2 per cent, whereas over the period 2009–2014, the economy contracted at an average rate of 1.9 per cent. Over the 5-year period 2015–2019, real GDP grew significantly at an average rate of 5.6 per cent while for 2020 economy contracted with a rate of 3.2 per cent as a result of COVID-19 pandemic. The economy expanded strongly in 2021 and 2022, with growth rates of 11.4 and 8.3 per cent, respectively. In 2023, growth continued but moderated to 3.6 per cent, reflecting a slowdown from the previous year's peak.

The real GDP growth is expected to gradually decrease from 3.6 per cent in 2024 to 2.1 per cent in 2028, averaging to 2.7 per cent over the 5-year period 2024–2028. Subsequently, the real GDP growth rate is projected to decline slightly to 1.9 per cent by 2030, maintaining this level steadily until 2033, averaging

to 1.9 per cent over the period 2029–2033. In 2033, we expect GDP real growth rate to remain stable at a level of 1.9 per cent.

As shown in table 4.2, during the whole projection period the driving forces behind economic growth will equally be an increase of labour productivity and an additional employment.

► **Table 4.2. Annual growth of GDP, productivity and employment, 2024–2033**
(percentages)

Year	Annual real GDP growth	Annual increase of productivity per worker	Annual employment growth (ages 15–74)
2024	3.6	2.4	1.2
2025	2.8	2.3	0.5
2026	2.5	1.6	0.9
2027	2.3	1.3	1.0
2028	2.1	1.2	0.9
2029	2.0	1.1	0.9
2030	1.9	0.9	1.0
2031	1.9	0.8	1.0
2032	1.9	0.9	1.0
2033	1.9	1.0	0.9

Source: Author's calculation. Year 2024 is based on National accounts data. Years 2025–2027 are based on Ministry of Finance's forecast.

4.2.2. Labour force, employment and unemployment

In the long run, labour supply is basically determined by the development of the population and its structure, and by changes in the labour market behaviour of private households.

Over the period 2018–2023, the overall labour force participation rate for females for the age group 15 to 64 increased significantly by 5.5 percentage points, from 70.4 per cent in 2018 to 75.9 per cent in 2023. Over the same period, the female participation rate for the age group 55 to 64 also experienced a significant increase of 7.5 percentage points, from 54.6 per cent in 2018 to 62.1 per cent in 2023.

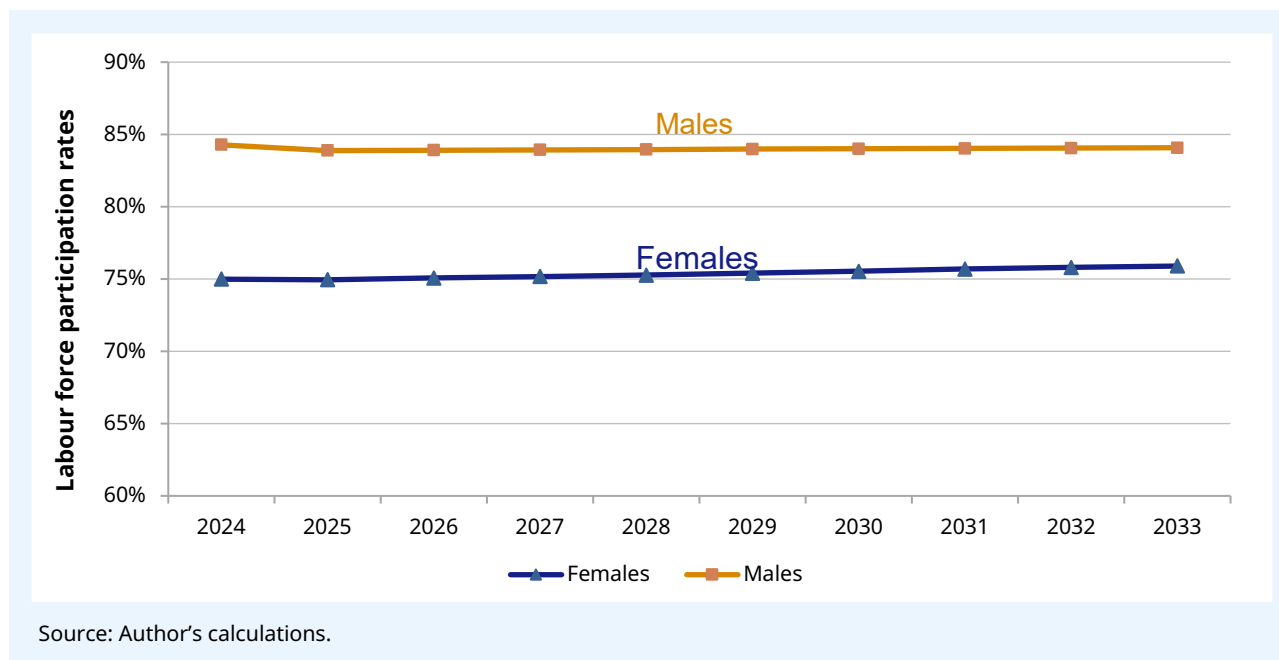
For the male population, over the period 2018–2023, the overall participation rate for the age group 15 to 64 also increased significantly by 4.8 percentage points, from 79.9 per cent in 2018 to 84.7 per cent in 2023. As well, the corresponding participation rate for the age group 55 to 64, over the same period, experienced a moderate increase by 3.1 percentage points, from 75.2 per cent in 2018 to 78.3 per cent in 2023.

More recent data obtained from the Statistical Service of Cyprus indicate a decline in labour force participation rates for both genders over the period 2023 to 2024. Female participation decreased from 75.9 per cent to 75.0 per cent, while male participation declined more modestly from 84.7 per cent to 84.3 per cent over the same period.

As illustrated in table 4.3 and figure 4.5, over the projection period the average labour force participation rate for males is projected to decrease marginally from its current level of 84.3 per cent in 2024 to 84.1 per cent by 2033. In contrast, female participation is assumed to increase moderately from 75.0 per cent in 2024 to 75.9 per cent by 2033. The projected increase in female participation rates over the projection period are primarily driven by the demands of a continuously expanding economy, as

well as the expected rise in the average exit age from the labour force. The latter is largely attributable to the GSIS legal provision linking the statutory pensionable age to life expectancy.

► **Figure 4.5. Projected labour force participation rates, 2024–2033**



► **Table 4.3. Assumptions of labour force participation, employment and unemployment rates, 2024–2033 (percentages)**

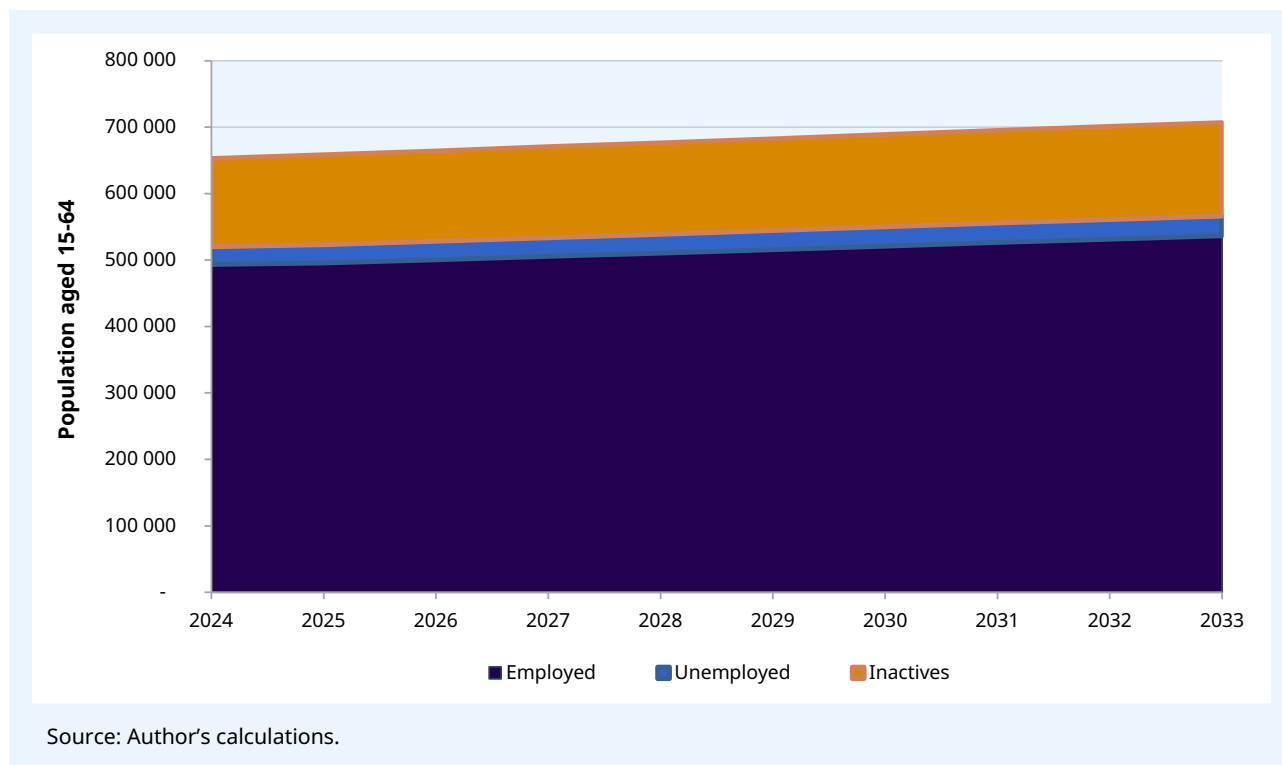
Assumption		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Labour force participation rate (ages 15–64)	Male	84.3	83.9	83.9	83.9	84.0	84.0	84.0	84.0	84.1	84.1
	Female	75.0	75.0	75.1	75.2	75.3	75.4	75.5	75.7	75.8	75.9
	Total	79.6	79.4	79.5	79.6	79.7	79.7	79.8	79.9	80.0	80.1
Employment rate (ages 15–64)		75.5	75.3	75.3	75.4	75.5	75.5	75.6	75.7	75.8	75.9
Unemployment rate (ages 15–64)		5.1	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.3

Once the labour force participation rates are determined on the basis of age group and gender, they are applied to the projected population to obtain the labour force. This projection reveals moderate growth of the labour force up to 2033.

The projected number of employed persons is then derived by applying the unemployment rates to the projected labour force. As shown in table 4.3, the unemployment rate for both males and females is anticipated to increase marginally from its current level of 5.1 per cent in 2024 to 5.3 per cent in 2028 and remain stable thereafter.

Table 4.3 also shows the development of the overall employment rate (the ratio of the number of employed persons aged 15–64 to the number of people aged 15–64), which is expected to increase from 75.5 per cent in 2024 to 75.9 per cent in 2033.

Figure 4.6 shows the changes in the population aged 15 to 64 over the projection period 2024–2033 according to the labour force status: employed, unemployed and inactive persons.

► **Figure 4.6. Evolution of the distribution of population aged 15–64, by labour force status, 2024–2033**

4.2.3. Inflation, wages and interest rates

Price inflation, as measured by the consumer price index (CPI), tends to fluctuate from year to year. The desire of the European Central Bank to maintain inflation rates below, but close to 2 per cent, leads us to expect an ultimate, constant inflation rate of 2 per cent over the projection period. The average inflation rate for the euro area since 1999, when the euro currency was formally introduced, up to 2023 has been 2.3 per cent.

In Cyprus, the consumer price index rose markedly over the period 2021–2023, with increases of 2.5, 8.4 and 3.5 per cent respectively. As shown in table 4.4, the annual price inflation rate is assumed to be 2.3 per cent for 2024 and 2.2 per cent for 2025 declining incrementally each subsequent year to reach its target rate of 2.0 per cent in 2027.

The real rate of increase in average wages in the long term is tied to increases in labour productivity. This assumption also takes into account the anticipated growth in the labour force in future. Considering the current economic environment, a real wage growth of 1.6 per cent is assumed for 2024 and 1.2 per cent for 2025. Over the following eight years, the period 2026–2033, real wage growth is set to be averaged at 0.9 per cent.

Table 4.4 shows the expected evolution of nominal wage growth rates. For 2024, nominal wage growth is assumed to be 3.9 per cent for 2024 and 3.4 per cent for 2025, and thereafter, for the rest of the projection period, it is expected to be in the range of 2.8 to 3.0 per cent, averaging to 2.9 per cent.

► **Table 4.4. Assumptions of inflation rate, real and nominal increase of average wage, 2024–2033** (percentages)

Year	Inflation rate	Annual real increase of average wage	Annual nominal increase of average wage
2024	2.3	1.6	3.9
2025	2.2	1.2	3.4
2026	2.1	0.9	3.0
2027	2.0	0.8	2.8
2028	2.0	0.8	2.8
2029	2.0	0.8	2.8
2030	2.0	0.9	2.9
2031	2.0	0.9	2.9
2032	2.0	1.0	3.0
2033	2.0	1.0	3.0

► 5. General Healthcare System: Experience and assumptions

This chapter presents the General Healthcare System (GHS) experience and assumptions made for the purpose of conducting the present actuarial valuation, and concern the GHS historical financial position, the GHS experience for contributors and beneficiaries, the historical claims cost and historical utilization of GHS services.

5.1. Financial experience

For the projection of the future GHS financial position, the starting point is the scheme's financial position as of 31 December 2023.

Table 5.1 shows the GHS financial position of the GHS for the financial years 2022 and 2023.

► **Table 5.1. Financial statements, 2022–23 (euros)**

	2022	2023
Contributions to GHS	1 353 310 345	1 534 349 022
Co-payments and contributions	48 030 881	50 522 568
Discounts from pharmaceutical companies	45 024 749	47 983 600
Other income items	2 738 924	2 858 447
Other income	33 658 084	21 513 509
Total revenue	1 482 762 983	1 657 227 146
Cost of services	–1 398 072 929	–1 475 887 150
Administrative expenses	–18 017 342	–24 510 854
Total costs and expenses	–1 416 090 271	–1 500 398 004
Surplus/(Deficit)	66 672 712	156 829 142
Net financing income (expense)	–956 183	1 833 134
Surplus/(Deficit) before taxation	65 716 529	158 662 276
Taxation	–90	–381 529
Net Surplus/(Deficit) for the year	65 716 439	158 280 747
Cumulative Surplus/(Deficit) for the year	65 716 439	158 280 747

Table 5.2 presents a high-level comparison between the financial statement (FS) figures (contributions and cost of services) and the past experience data extracted from the HIO database (HIO data) and used for the conduct of the current actuarial valuation.

► **Table 5.2. Reconciliation of financial statements with the data received, 2022–23**

	2022			2023		
	FS (€)	HIO data (€)	Comparison (%)	FS (€)	HIO data (€)	Comparison (%)
Contributions to GHS	1 353 310 345	1 347 540 125	–0.4	1 534 349 022	1 530 715 760	–0.2
Cost of GHS services	1 398 072 929	1 388 050 569	–0.7	1 475 887 150	1 470 705 546	–0.4

Table 5.3 shows some key financial indicators regarding the GHS financial position. It follows that for the financial year 2023, there was a significant increase for both reserve ratio and administrative expense ratio over total expenditure, as well as the accumulated surplus (reserve) in absolute terms increased. This increase of the accumulated surplus (reserve) which resulted also to the increase of the reserve ratio in 2023, primarily is due to a significant increase of the income from contributions. The increased income from contributions for 2023 is due to the following two factors: (i) the significant increase of GHS employed contributing population, primarily reflecting favourable demographics (high migration) and positive labour market developments (higher participation rates) and (ii) the considerable increase of GHS employee contributory earnings, primarily reflecting positive evolution of wages. Indicatively, the GHS contributions were increased by 13 per cent, €181 million in absolute terms, and the accumulated surplus increased by 36 per cent, €158 million in absolute terms. Administrative expense ratio was increased as the administrative expenses increased by 36 per cent from 2022 to 2023 while for the same period the total costs and expenses increased by 6 per cent.

► **Table 5.3. Financial Indicators, 2022–23**

	2022	2023
Accumulated surplus (reserve) (€)	435 753 622	594 034 369
Reserve ratio	0.31	0.40
Administrative expense ratio (%)	1.3	1.6

5.2. Coverage experience

The projection of the number of GHS active contributors and beneficiaries is based on the projection of the general population of the country.

The projection for the active contributors begins with the latest available statistical data on population by the Statistical Service of Cyprus as at 31 December 2023, to which the demographic assumptions presented in Chapter 4 on the future development of fertility, mortality and migration are applied. Assumptions on labour force participation rates, employment rates, rate of coverage of the employed population, and annual decrements by termination causes under the cohort method, are applied to finally obtain the demographic projections of active contributors' population. The projection of the active contributors' earnings, salaries or pensions, were based on the economic assumptions also presented in Chapter 4.

The projection of registered beneficiaries begins with the latest available data on registered beneficiaries by the HIO as at 31 December 2023, to which the demographic assumptions presented in Chapter 4 on the future development of fertility, mortality and migration are applied. Moreover, further estimates on the number of registered beneficiaries were provided by the HIO as of 31 December 2024, resulting to an increased projected number of beneficiaries for 2024, primarily representing the impact of 2024 net migration.

Table 5.4 shows the development of GHS active contributors by category, namely employed and self-employed persons who are the GSIS contributors as well as, pensioners who are the beneficiaries of a GSIS or Social pension for the years 2022 and 2023.

► **Table 5.4. Active contributors to the GHS, 2022–23**

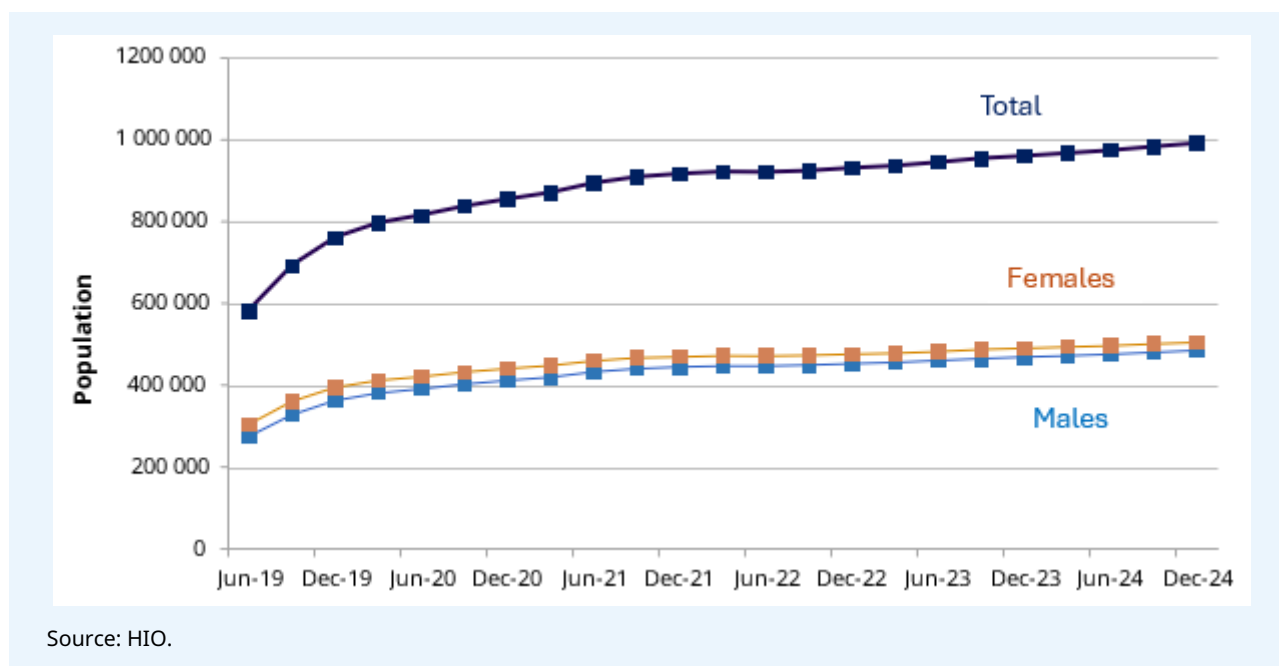
		Number of contributors	
		2022	2023
Employed persons	Male	277 461	291 021
	Female	246 829	257 449
Self-employed persons	Male	17 205	17 321
	Female	13 952	13 818
		Number of pensions	
		2022	2023
GSIS statutory pension		131 980	137 615
GSIS invalidity pension		3 783	3 584
GSIS widow's pension		33 902	34 540
GSIS disablement pension		774	745
GSIS orphans' benefit		1 005	961
Pension under SPS		16 244	16 773

Table 5.5 and figure 5.1 show the number of registered beneficiaries, by gender, since the inception of the GHS, for selected months during the period from June 2019 to December 2024.

► **Table 5.5. Registered beneficiaries in the GHS, 2019–2024**

Month	Male	Female	Total	Percentage increase (%)
Jun-19	277 796	304 546	582 342	–
Sep-19	330 778	361 128	691 906	19
Dec-19	364 711	395 619	760 330	10
Mar-20	382 557	413 075	795 632	5
Jun-20	392 278	422 221	814 499	2
Sep-20	403 674	433 206	836 880	3
Dec-20	412 692	441 858	854 550	2
Mar-21	420 428	449 404	869 832	2
Jun-21	433 153	460 730	893 883	3
Sep-21	440 956	467 912	908 868	2
Dec-21	445 866	470 779	916 645	1
Mar-22	448 169	473 518	921 687	1
Jun-22	447 927	472 835	920 762	0
Sep-22	450 081	474 011	924 092	0
Dec-22	453 409	477 466	930 875	1
Mar-23	456 465	479 586	936 051	1
Jun-23	460 719	483 750	944 469	1
Sep-23	465 361	488 520	953 881	1
Dec-23	468 940	491 560	960 500	1

Month	Male	Female	Total	Percentage increase (%)
Mar-24	472 127	494 651	966 778	1
Jun-24	475 916	498 134	974 050	1
Sep-24	480 690	502 185	982 875	1
Dec-24	485 063	506 499	991 562	1

► **Figure 5.1. Evolution of the number of registered beneficiaries, 2019–2024**

It follows from both table 5.5 and figure 5.1 that, for the first year of the GHS inception (June 2019 to June 2020) there was a significant increase in the number of registered beneficiaries, averaging to 10 per cent per quarter, while the increase for the 54-month period from June 2020 to December 2024 was on average only 1 per cent per quarter.

5.3. Claims experience and projection assumptions

As described in section 3.2, the projection of the GHS benefit expenditure, representing the claims cost for each healthcare service, is based on the projection of the number of registered beneficiaries, the projected utilization rates for each healthcare service and the projected average cost per claim, as adjusted by the projected medical inflation for each healthcare service. The projection of utilization rates is based on the available claims data and the observed trends concerning the usage of each healthcare service. The projection of the average cost for each healthcare service is based on the average points per claim and the average point value which is adjusted over time in line with projected medical inflation.

Moreover, with respect to healthcare services for which either utilization rates or average claim costs did not reach a stable level, additional claims data up to December 2024 were provided by the HIO. The above data was used to identify trends in utilization and claim costs for inpatients and outpatients.

5.3.1. Overview of past claims expenditure

This section provides an analysis of the historical GHS claims expenditure, highlighting the primary cost drivers and observed trends across the various healthcare categories. The detailed analysis of past experience for all healthcare service categories is provided in Annex 4 of this report.

Tables 5.6 to 5.9 show past claim experience for the years 2021–2024 for each main healthcare category (inpatient, outpatient, laboratories and pharmaceuticals for outpatient), in terms of the number of claims, the average points per invoice, the total claims amount and the average amount per claim.

► **Table 5.6. Claims experience, inpatients, 2021–2024**

Year	Inpatient category	Number of claims	Total amount (€)	Average total amount per claim (€)
2021	DRGs	186 934	429 197 043	2 296
	Z-Drugs	104 711	40 220 541	384
	Z-Consumables	136 012	57 375 466	422
	Z-Procedures & fixed fee	163 913	59 199 062	361
2022	DRGs	212 518	442 622 946	2 083
	Z-Drugs	113 333	34 054 496	300
	Z-Consumables	167 315	71 361 163	427
	Z-Procedures & fixed fee	197 302	55 816 725	283
2023	DRGs	251 855	497 367 184	1 975
	Z-Drugs	138 117	42 371 705	307
	Z-Consumables	200 814	84 105 598	419
	Z-Procedures & fixed fee	238 061	60 882 665	256
2024	DRGs	286 390	553 376 201	1 932
	Z-Drugs	181 637	54 826 082	302
	Z-Consumables	230 020	98 456 612	428
	Z-Procedures & fixed fee	272 083	69 839 943	257

► **Table 5.7. Claims experience, outpatients, 2021–2024**

Year	Outpatient category	Number of claims	Total amount (€)	Average total amount per claim (€)
2021	Allied health professionals	793 405	25 915 313	33
	Dentists	263 841	10 270 704	39
	Nurses and midwives	23 129	567 217	25
	Outpatient specialist doctors ¹	3 877 189	230 839 791	60
2022	Allied health professionals	1 104 051	35 346 589	32
	Dentists	279 071	10 877 473	39
	Nurses and midwives	51 678	1 379 330	27
	Outpatient specialist doctors ¹	3 933 859	232 840 210	59
2023	Allied health professionals	1 356 417	42 439 910	31
	Dentists	305 110	11 887 302	39
	Nurses and midwives	79 542	2 259 033	28
	Outpatient specialist doctors ¹	4 204 998	238 974 093	57
2024	Allied health professionals	1 592 515	49 162 814	31
	Dentists	324 826	12 653 534	39
	Nurses and midwives	94 821	2 788 546	29
	Outpatient specialist doctors ¹	4 453 081	244 514 340	55

Note: ¹ It includes outpatient activities undertaken by personal doctors, the total expenditure of those activities is limited up to around 2% in 2022, 4% in 2023 and 3.8% in 2024 of total outpatient expenditure.

► **Table 5.8. Claims experience, laboratories, 2021–2024**

Year	Laboratory test categories	Number of claims	Total amount (€)	Average points per invoice	Average total amount per claim (€)
2021	Biochemistry	908 376	27 507 063	38.6	30
	Haematology	783 226	4 774 208	7.8	6
	Immunology	814 009	18 897 023	29.6	23
	Microbiology	386 697	2 380 192	7.9	6
2022	Biochemistry	941 815	26 882 873	37.1	29
	Haematology	797 548	4 742 402	7.7	6
	Immunology	854 560	19 395 800	29.5	23
	Microbiology	398 088	2 407 321	7.9	6
2023	Biochemistry	989 897	25 937 287	34.0	26
	Haematology	816 740	4 847 642	7.7	6
	Immunology	887 976	20 464 564	30.0	23
	Microbiology	415 623	2 954 645	9.3	7
2024	Biochemistry	1 039 683	25 074 373	33.8	24
	Haematology	848 120	4 733 921	7.8	6
	Immunology	946 623	20 888 288	31.0	22
	Microbiology	436 363	3 618 439	11.2	8

► **Table 5.9. Claims experience, pharmacies and pharmaceuticals for outpatient care, 2021–2024**

Year	Number of claims	Total outpatient pharmaceuticals ¹ amount (€)	Pharmacies' fees (€)	Overnight fees (€)	Average pharmaceuticals amount per claim (€)
2021	6 631 558	196 868 923	32 205 197	547 811	30
2022	7 382 662	216 814 135	32 112 393	549 999	29
2023	8 051 138	239 948 510	33 837 183	550 001	30
2024	8 432 265	285 305 248	35 430 994	550 008	34

Note: ¹ Pharmaceuticals represent outpatient pharmacies drugs, medical devices and consumables.

5.3.2. Historical medical inflation and assumption

Table 5.10 shows the historical medical inflation rate by healthcare category over the 12-year period from 2012 to 2024.

► **Table 5.10. Historical medical inflation, by healthcare category, 2012–2024 (percentages)**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Medical products, appliances and equipment	0.4	-1.2	-0.2	-1.4	-0.3	0.0	-0.9	-2.2	0.1	1.2	1.3	2.7	1.8
Pharmaceutical products	0.0	-1.2	-0.1	-1.6	-0.4	0.1	-1.1	-2.4	-0.1	1.1	1.0	2.5	1.8
Outpatient services	0.7	-4.1	-3.0	0.8	1.5	0.9	0.7	0.8	0.8	0.6	0.5	1.0	1.1
Medical services	1.0	-4.9	-2.9	1.6	2.2	1.4	2.1	1.2	0.1	0.3	0.1	0.1	0.6
Dental services	0.2	-2.5	-2.8	-1.5	0.6	0.4	0.9	1.4	1.1	1.5	1.5	4.0	3.0
Paramedical services	0.5	-3.7	-3.3	0.9	1.0	0.5	-0.2	0.1	1.3	0.6	0.5	0.6	0.6
Hospital services	0.4	0.6	2.2	1.4	1.9	1.7	1.0	0.7	0.3	0.1	0.3	0.5	0.5
Total health	0.6	-2.5	-1.3	0.4	1.1	0.8	-0.1	-0.3	0.5	0.7	0.8	1.5	1.2

Note: Base year 2011.
Source: CyStat.

It follows from table 5.10 that overall the introduction of the GHS restrained the upward trend in medical inflation and could secure a stability in its future trends. Medical inflation increases observed in 2023 and 2024, mainly for the categories “medical products, appliances and equipment” and “pharmaceutical products” reflecting the unusually high inflationary pressures observed in recent years, particularly to a greater extent in 2023 and, to a lesser extent, in 2024.

Table 5.11 shows the medical inflation assumption by healthcare category over the period from 2026 to 2033. With respect to the years 2024 and 2025, medical inflation cost is included in the estimated expenditure figures, which are based on the actual/agreed reimbursement amounts.

► **Table 5.11. Medical inflation assumption, by category, 2026–2033 (percentages)**

Healthcare category	2026	2027	2028	2029	2030	2031	2032	2033
Personal doctors	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Outpatient specialist doctors	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Pharmacies and pharmaceuticals for outpatient care	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2
Laboratories	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2
Inpatient DRGs	1.9	2.0	2.0	2.0	2.0	2.1	2.2	2.2
Z-Consumables	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2
Z-Drugs	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2
Z-Procedures & fixed fee	1.9	2.0	2.0	2.0	2.0	2.1	2.2	2.2
A&E departments and ambulances	1.7	1.7	1.8	1.9	1.9	1.8	1.8	1.8
Dentists	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Nurses and midwives	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Allied health professionals	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Rehabilitation and palliative care	1.7	1.7	1.8	1.9	1.9	1.8	1.8	1.8

5.3.3. Assumptions used for the projections

This section presents a sample of the main scheme-specific assumptions used for the projection of claims of various healthcare categories from 2024 and onwards, focusing specifically on Inpatient DRGs, Outpatient specialist services, and outpatient care pharmacies and pharmaceuticals. These assumptions relate to the variables of utilization rates and average cost per claim. The complete set of detailed assumptions applied across all healthcare categories for the projections can be found in Annex 4.

For the vast majority of GHS services, the utilization rates became stable by 2024, as indicated by the above past experience data analysis. Those utilization rates represent the basis for projecting future utilization levels until the end of the projection period.

Table 5.12 shows the assumption of inpatient DRGs' quarterly utilization rates by age group and gender over the years from 2024 to 2033.

► **Table 5.12. Inpatient DRGs, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	1.4	4.3	1.5	4.4	1.5	4.5	1.5	4.5
4–7	3.0	2.4	3.0	2.3	3.1	2.3	3.1	2.3
8–14	1.8	1.5	1.9	1.5	1.9	1.5	1.9	1.5
15–17	2.3	2.1	2.4	2.1	2.4	2.1	2.4	2.1
18–25	2.4	3.1	2.4	3.1	2.4	3.1	2.5	3.2
26–30	2.4	5.0	2.4	5.1	2.5	5.2	2.5	5.2
31–35	2.6	6.7	2.7	6.8	2.7	6.8	2.7	6.9
36–40	3.0	6.4	3.0	6.5	3.1	6.6	3.1	6.6
41–45	4.3	6.6	4.3	6.7	4.4	6.8	4.4	6.8
46–50	6.7	8.0	6.8	8.2	6.8	8.3	6.9	8.3
51–55	6.7	7.7	6.8	7.9	6.9	8.0	6.9	8.0
56–60	8.5	7.5	8.6	7.6	8.7	7.6	8.7	7.6
61–65	11.1	8.8	11.5	9.0	11.6	9.1	11.6	9.1
66–70	15.7	11.2	16.0	11.7	16.1	11.8	16.2	11.8
71–75	20.4	14.4	20.8	14.6	21.0	14.7	21.1	14.8
76–80	25.4	16.6	25.7	17.0	25.9	17.1	26.0	17.2
81–85	26.1	16.2	26.6	16.6	26.8	16.7	27.0	16.8
86–90	26.9	16.6	27.1	16.7	27.3	16.9	27.4	16.9
91–95	26.3	16.7	26.2	16.6	26.4	16.7	26.5	16.8
96–100	34.0	19.5	34.6	19.6	34.9	19.8	35.1	19.9

Table 5.13 shows the assumption of outpatient specialists' quarterly utilization rates by age group and gender for the years from 2024 to 2033.

► **Table 5.13. Outpatient specialists, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	33.1	26.1	35.4	27.1	35.6	27.2	35.6	27.2
4–7	37.1	28.0	38.2	28.9	38.4	29.1	38.4	29.1
8–14	39.6	35.2	41.0	36.0	41.2	36.2	41.2	36.2
15–17	54.8	54.4	55.3	54.6	55.5	54.8	55.5	54.8
18–25	51.7	82.0	51.4	82.2	51.7	82.6	51.7	82.6
26–30	53.6	114.6	54.2	115.9	54.5	116.5	54.5	116.5
31–35	59.8	135.1	60.6	136.7	60.9	137.3	60.9	137.3
36–40	65.6	131.4	66.5	133.0	66.8	133.6	66.8	133.6
41–45	76.7	139.5	77.6	141.1	78.0	141.8	78.0	141.8
46–50	91.0	156.4	92.1	158.5	92.6	159.3	92.6	159.3
51–55	107.8	172.2	109.5	174.6	110.0	175.5	110.0	175.5
56–60	129.1	187.4	131.1	190.4	131.8	191.3	131.8	191.3

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
61–65	156.8	203.1	159.4	206.3	160.2	207.3	160.2	207.3
66–70	197.1	222.4	200.7	226.5	201.7	227.6	201.7	227.6
71–75	218.4	235.5	222.9	239.6	224.0	240.8	224.0	240.8
76–80	256.8	244.0	261.7	248.4	263.0	249.7	263.0	249.7
81–85	243.7	210.8	248.3	214.3	249.5	215.4	249.5	215.4
86–90	229.0	167.2	232.8	169.7	233.9	170.5	233.9	170.5
91–95	176.9	115.6	179.1	117.2	180.0	117.8	180.0	117.8
96–100	157.0	92.0	157.3	94.2	158.1	94.7	158.1	94.7

Table 5.14 presents the pharmacies and pharmaceuticals for outpatient care assumptions applied over the projection period 2024–2033, including pharmacist fee parameters (monthly utilisation rate, average number of packs dispensed, point value, and annual cost of the overnight fee). It also includes the monthly utilisation rates for outpatient drugs – Phase I: Generics/Off Patent and MeToo and Phase II: Innovative/high-cost Drugs – and for outpatient medical devices and consumables, together with the corresponding average cost per invoice for each category.

► **Table 5.14. Pharmacies and pharmaceuticals for outpatient care, monthly utilization rates and other projection assumptions, 2024–2033**

	2024	2025	2026	2027–2033
Pharmacist fee – Monthly utilization rate	72.2	72.2	72.2	72.2
Pharmacist fee – Average number of packs dispensed	2.5	2.5	2.5	2.5
Pharmacist fee – Point value	1.67	1.67	1.67	1.71
Pharmacist fee per overnight – Annual cost (€)	550 000	550 000	550 000	550 000
Outpatient drugs Phase I – Monthly utilization rate	67.2	68.0	68.0	68.0
Outpatient drugs Phase II – Monthly utilization rate	1.9	2.3	2.3	2.3
Outpatient medical devices and consumables – Monthly utilization rate	3.5	3.6	3.6	3.6
Outpatient drugs Phase I – Average cost per invoice	19	19	20	20
Outpatient drugs Phase II – Average cost per invoice	487	619	633	647
Outpatient medical devices and consumables – Average cost per invoice	35	37	40	43

The following assumptions were made regarding additional healthcare services that are already covered under the GHS or will be introduced over the next few years:

- **Inpatient care:** Treatment of GHS beneficiaries abroad will reach €32 million in 2025 and is expected to be gradually reduced to €31 million up to 2028. This cost is projected to grow in line with the relevant medical inflation from 2026 onwards.
- **Pharmaceuticals:** The projected cost associated with the ongoing introduction of additional new/innovative drugs – beyond those already incorporated in 2024 and 2025 under Outpatient drugs and Inpatient Z-drugs – is estimated at €20.4 million in 2026 gradually increasing to €55 million in 2033, excluding medical inflation. These amounts are assumed to grow in line with the relevant medical inflation from 2027 onwards.

- **Services of General Economic Interest (ΥΓΟΣ):** The cost stands at €37.3 million for 2024, increasing by 2 per cent annually for the years 2025 and 2026, and projected to reach €40.7 million by 2027. This cost is assumed to grow in line with the relevant medical inflation from 2027 onwards.

5.4. Administrative expenditure projection assumption

Administrative expenses were separated into four categories: staff expenses, operation expenses, development expenses and contingencies. Staff expenses were projected based on HIO strategic staffing plan and by applying the wage increase assumption presented in Chapter 4. Operation expenses, development expenses and contingencies were projected based on HIO operational and development plans and by applying the CPI assumption presented in Chapter 4.

► 6. General Healthcare System: Base scenario projection results

The present actuarial valuation deals with the ability of the GHS to meet its future obligations at the time they fall due. This is done under an open-group approach, which takes into consideration all current and future contributors of the GHS, including their future contributions and benefits, to determine whether current reserve and future contributions will be sufficient to pay for all future GHS expenditures. Future contributions and benefit expenditures are calculated:

- according to the methodology covered in Chapter 3;
- according to the demographic and economic assumptions presented in Chapter 4; and
- using the scheme-specific assumptions presented in Chapter 5 as well as the basis of the GHS specific database presented in Annexes 3 and 4.

The main purpose of the valuation is to find out whether the financing of the GHS is on course, and not to exactly forecast numerical values. Due to the nature of the assumptions, absolute figures include a degree of uncertainty. Therefore, results have to be interpreted carefully, and future actuarial valuations should be undertaken on a regular basis to check the actual experience in the light of the assumptions made.

6.1. Demographic projections

6.1.1. Projection of the GHS contributing population

The GHS contributing population consists of the employed population and the pensioner population. Table 6.1 shows the anticipated development of the GHS contributing persons by category over the projection period from 2024 to 2033. In particular, it shows the projection of the employed contributing population as well as the pensioner contributing population, which is represented by the number of pensions by type of pension, namely the GSIS pensions (statutory, invalidity, orphan's and widows) and the social pension.

The number of employed contributing population is directly linked to the assumed labour force participation rates applied to the working-age population. Hence, the demographic and labour market assumptions have a great impact on the expected number of future contributors. As shown in table 6.1, the number of GHS employed contributing persons is expected to increase continuously for the rest of the projection period due to the projected increase in the working-age population, mainly due to the projected positive net migration, and in the labour force. In particular, over the projection period, the number of employed contributing persons is expected to increase by 12.2 per cent, i.e., from 590,139 in 2024 to 661,879 in 2033.

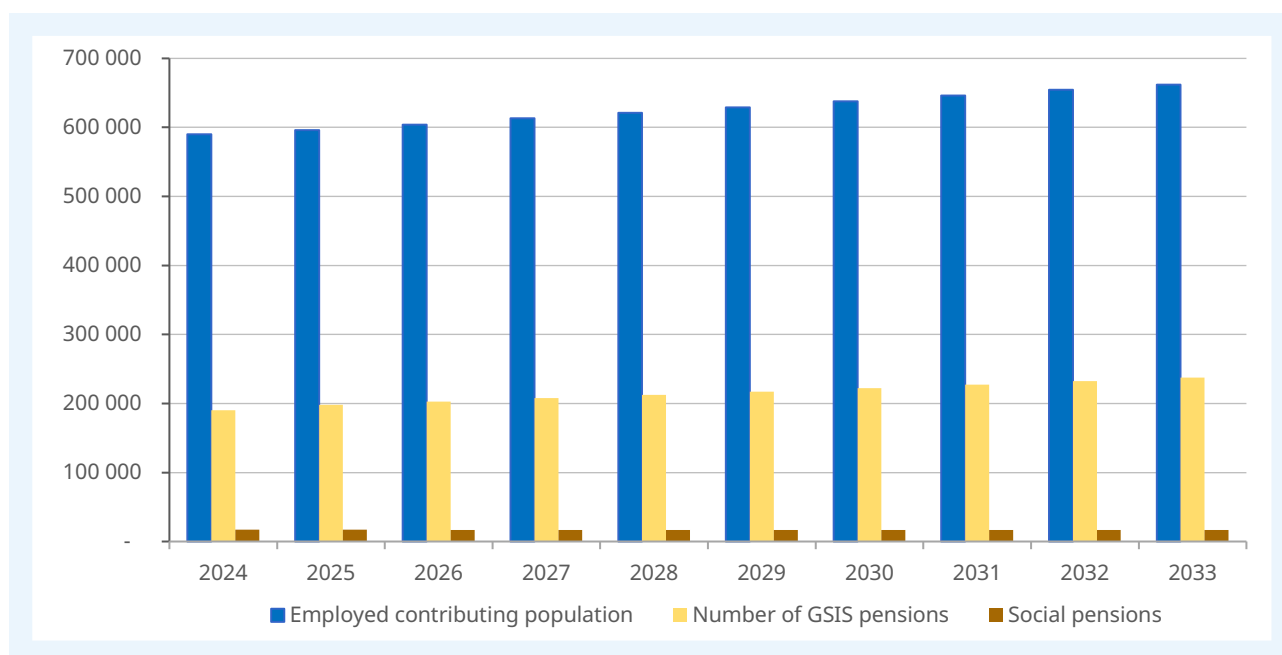
The total number of GSIS pensions also increases during the projection period. In particular, the total number of GSIS pensions is expected to increase by 24.9 per cent, increasing from 190,207 in 2024 to 237,562 in 2033.

Furthermore, the number of social pensions is expected to decrease, by 2.7 per cent.

► **Table 6.1. Projection of GHS contributing population, by category, 2024–2033**

Year	Employed contributing population	Number of GSIS pensions					Social pensions
		Statutory	Invalidity	Widows	Orphans	Total	
2024	590 139	148 407	4 016	37 129	655	190 207	17 242
2025	595 984	155 073	3 961	38 382	686	198 102	17 163
2026	604 094	158 821	3 880	39 594	689	202 984	17 058
2027	612 970	162 359	3 853	40 775	692	207 679	16 924
2028	621 012	165 907	3 839	41 910	685	212 341	16 752
2029	629 138	169 566	3 865	43 004	694	217 129	16 820
2030	637 576	173 527	3 856	44 074	687	222 144	16 852
2031	646 235	177 534	3 906	45 128	682	227 250	16 854
2032	654 258	181 605	3 936	46 165	667	232 373	16 829
2033	661 879	185 737	3 995	47 201	629	237 562	16 778

Figure 6.1 shows the expected evolution of the number of GHS contributors by category over the projection period 2024–2033.

► **Figure 6.1. Projection of GHS contributing population by category, 2024–2033**

6.1.2. Projection of GHS registered beneficiaries

Table 6.2 shows the anticipated development of the number of GHS registered beneficiaries. This is directly linked to the demographic framework, namely the assumed fertility, mortality and net migration. As shown in table 6.2, the number of GHS registered beneficiaries is expected to increase continuously for the rest of the projection period mainly due to the projected increase in fertility and net migration. In particular, over the projection period, the number of registered beneficiaries is expected to increase by 10.9 per cent, i.e., from 991,562 in 2024 to 1,099,323 in 2033.

Table 6.2 presents the projection of year-end GHS registered beneficiary population for the period 2024 to 2033.

► **Table 6.2. Projection of year-end GHS registered beneficiaries, by gender, 2024–2033**

Year	Male	Female	Total
2024	485 063	506 499	991 562
2025	493 119	511 951	1 005 070
2026	500 884	517 306	1 018 190
2027	508 304	522 512	1 030 816
2028	515 453	527 613	1 043 066
2029	522 347	532 565	1 054 912
2030	529 009	537 382	1 066 391
2031	535 493	542 119	1 077 612
2032	541 815	546 771	1 088 586
2033	547 984	551 339	1 099 323

Table 6.3 shows the anticipated development in the number of GHS registered beneficiaries by age group at the end of each year.

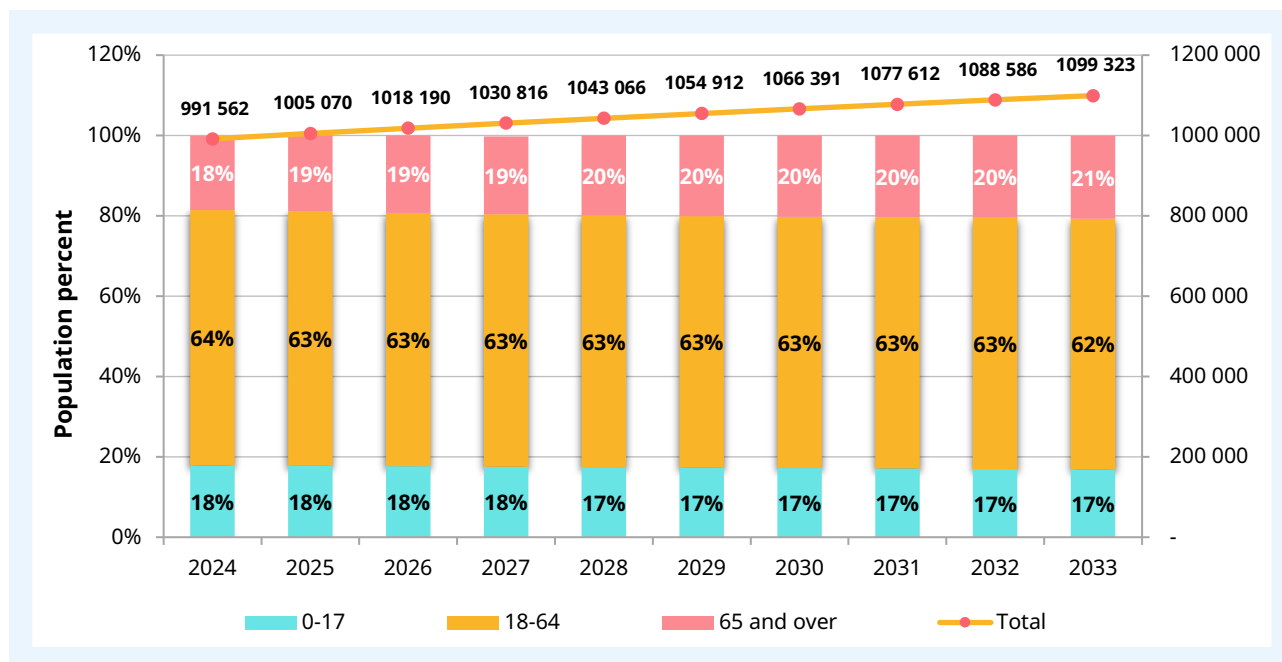
► **Table 6.3. Projection of year-end GHS registered beneficiaries, by age group, 2024–2033**

Year	0–17	18–64	65 and over	Total
2024	176 748	631 187	183 627	991 562
2025	178 604	635 775	190 691	1 005 070
2026	180 007	641 806	196 377	1 018 190
2027	180 982	647 664	202 170	1 030 816
2028	181 879	654 000	207 187	1 043 066
2029	182 937	659 866	212 109	1 054 912
2030	183 401	667 633	215 357	1 066 391
2031	184 302	673 923	219 387	1 077 612
2032	185 026	680 662	222 898	1 088 586
2033	185 695	687 097	226 531	1 099 323

The percentage of registered beneficiaries aged 18–64 over the total registered beneficiaries decreases from 63.7 per cent in 2024 to 62.4 per cent in 2033, while the percentage of registered beneficiaries aged 65 and above over the total registered beneficiaries increases from 18.4 per cent in 2024 to 20.6 per cent in 2033. It follows that the beneficiaries' age composition shows a small ageing effect over the projection period.

Figure 6.2 shows graphically the projection of year-end GHS registered beneficiaries and their percentage distribution by age group for 2024 to 2033.

► **Figure 6.2. Projection of year-end GHS registered beneficiaries, by age group, 2024–2033**



6.2. Financial projections

6.2.1. Projection of employee contributory earnings and other income sources

Table 6.4 shows the projection of the earnings of employees (salaried and self-employed) and the various other income sources which are subject to GHS contributions for the period 2024 to 2033.

► **Table 6.4. Projection of employee contributory earnings and other income sources, 2024–2033 (in millions of euros)**

Year	Employee contributory earnings	GSIS pension	Other pensions			Other income sources				
			GEPS	Semi-state pension schemes	Social pension	Cash deposits	Interest on cash deposits	Rents	Dividends	Other taxable income related to GHS
2024	13 808	1 971	428	86	100	27 980	154	730	1 621	496
2025	14 834	2 121	433	87	106	29 295	161	821	1 822	507
2026	15 450	2 275	435	87	110	30 711	172	838	1 861	518
2027	16 074	2 409	436	87	114	32 046	186	855	1 898	528
2028	16 652	2 538	436	87	117	33 373	200	872	1 936	539
2029	17 290	2 668	436	87	121	34 722	215	889	1 974	550
2030	17 942	2 809	436	87	126	36 089	231	907	2 014	560
2031	18 672	2 947	436	87	131	37 510	247	925	2 054	572
2032	19 372	3 091	435	87	135	38 987	269	944	2 095	583
2033	20 139	3 240	434	87	140	40 523	291	963	2 137	595

6.2.2. Projection of GHS income

Table 6.5 shows the projection of GHS income by category over the projection period from 2024 to 2033.

► **Table 6.5. Projection of GHS income, by category, 2024–2033** (in millions of euros)

GHS income category	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Contributions (salaries, pensions)	826	886	924	961	997	1 035	1 075	1 118	1 160	1 207
Government as State	769	826	862	899	932	968	1 006	1 047	1 087	1 130
Other contribution income	79	88	90	92	94	96	98	101	103	105
Contribution income	1 674	1 800	1 876	1 952	2 023	2 099	2 179	2 266	2 350	2 442
Income from treatment of EU citizens	18	32	35	39	43	46	48	50	52	53
Co-payments	51	55	57	58	59	60	61	61	62	63
Contributions I	3	3	3	3	3	3	3	3	3	3
Discounts from pharmaceutical companies	80	92	98	100	102	104	106	109	112	114
Discounts/claw-backs for Z-consumables	–	11	12	13	13	14	14	14	15	16
Total GHS income	1 826	1 993	2 081	2 165	2 243	2 326	2 411	2 503	2 594	2 691

Note: “Other contribution income” includes interest on cash deposits, rents, dividends, and other taxable income related to GHS.

Table 6.6 shows a further breakdown of GHS contribution income by income source for the period 2024 to 2033.

► **Table 6.6. Projection of GHS contribution income, by income source, 2024–2033** (in millions of euros)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Salaried and government employees	726	780	812	844	876	909	944	982	1 019	1 060
Self-employed persons	29	31	33	34	35	36	38	39	40	42
GSIS pensions	52	56	60	64	67	71	74	78	82	86
Other pensions	19	19	19	19	19	19	19	19	19	19
Other contribution income	79	88	89	92	94	96	98	101	103	105
Government as State	769	826	863	899	932	968	1 006	1 047	1 087	1 130
Contribution income	1 674	1 800	1 876	1 952	2 023	2 099	2 179	2 266	2 350	2 442

Note: “Other contribution income” includes interest on cash deposits, rents, dividends, and other taxable income related to GHS.

Table 6.7 shows the projection of other income for the period 2024 to 2033. Other income primarily comprises investment income, mainly arising from interest paid on the reserve of the GHS, as well as rental and other financial income.

► **Table 6.7. Projection of other income, 2024–2033** (in millions of euros)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Other income	7	10	12	13	13	15	15	16	16	17

6.2.3. Projection of benefits expenditure

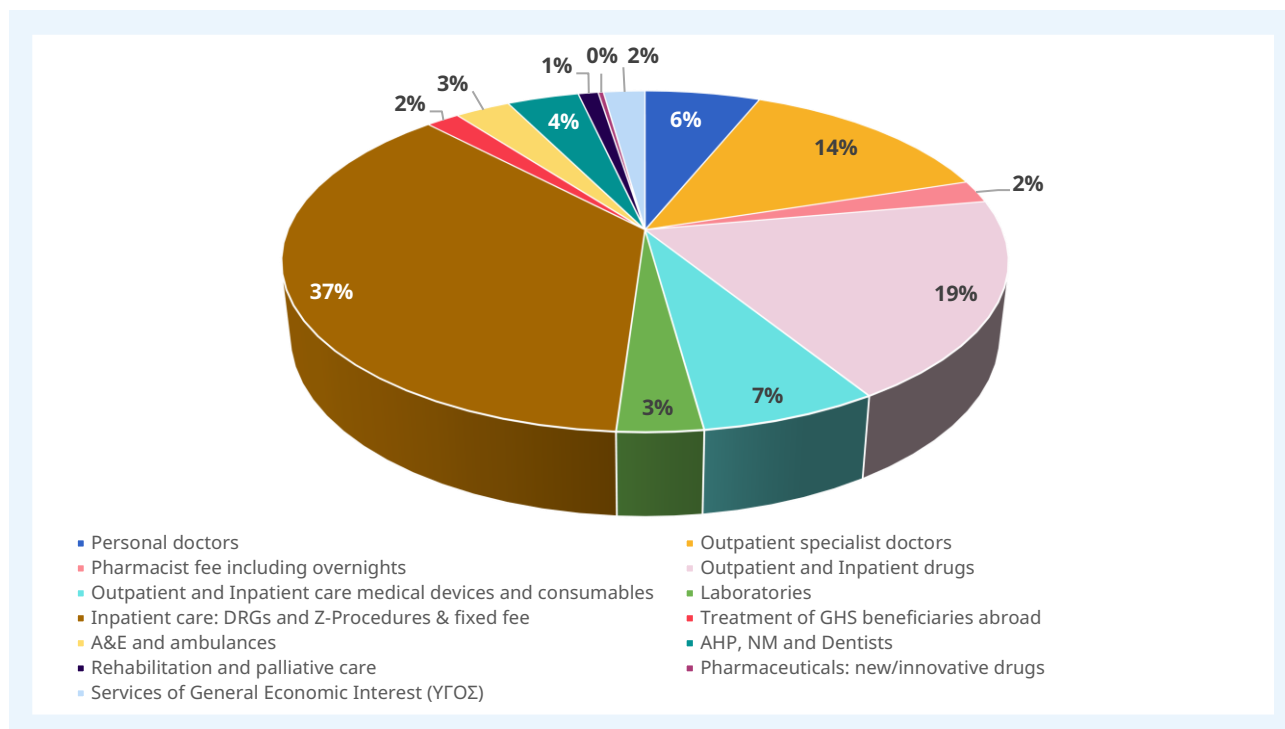
Table 6.8 shows the projection of benefits expenditure by healthcare category over the projection period of 2024 to 2033.

► **Table 6.8. Projection of GHS benefit expenditure, by healthcare category, 2024–2033** (in millions of euros)

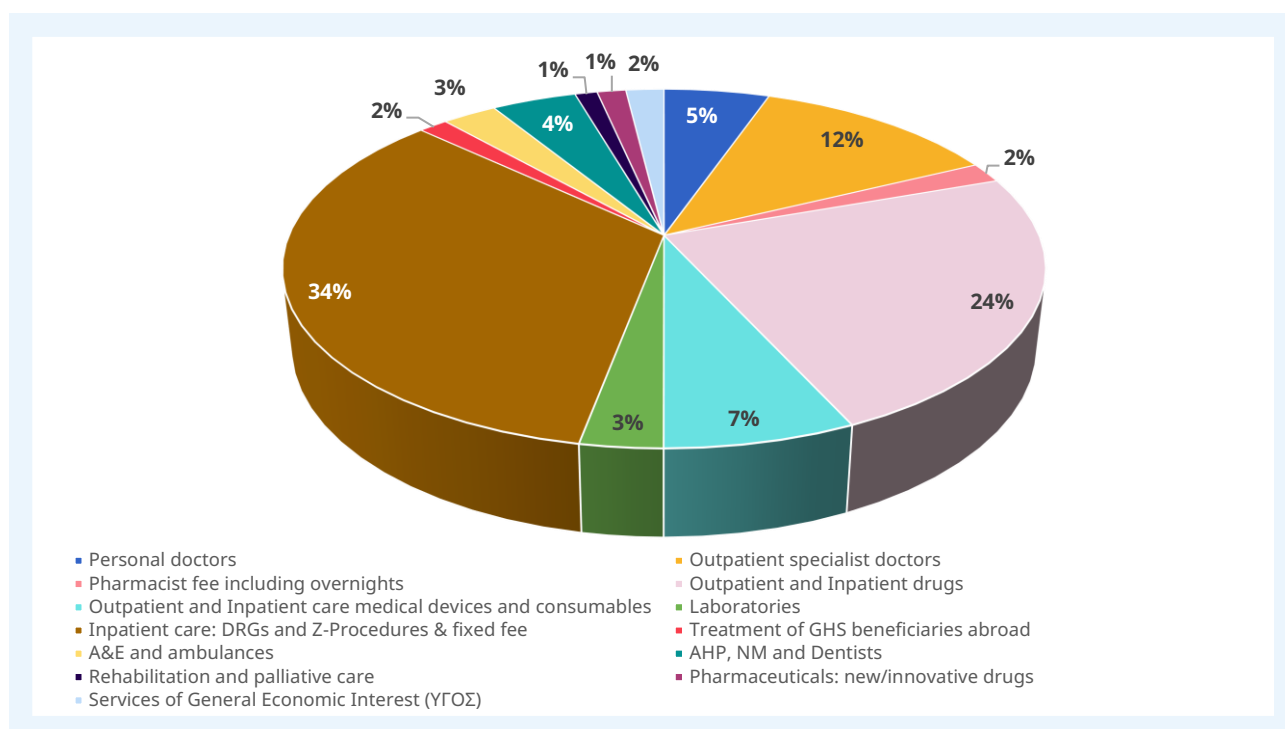
Healthcare category	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Personal doctors	104	106	109	114	117	122	126	131	135	139
Outpatient specialist doctors	235	245	255	264	273	282	291	300	309	319
Pharmacist fee including overnights	36	37	37	39	40	41	43	44	45	47
Outpatient and Inpatient drugs	321	465	482	501	519	536	553	571	590	609
Outpatient and Inpatient care medical devices and consumables	113	130	138	145	151	157	162	168	174	180
Laboratories	54	58	61	63	65	67	69	71	73	75
Inpatient care: DRGs and Z-Procedures & fixed fee	623	657	689	720	748	776	803	832	862	893
Treatment of GHS beneficiaries abroad	30	32	32	33	32	33	34	34	35	36
A&E and ambulances	50	54	56	59	61	62	63	65	66	67
AHP, NM and Dentists	65	78	85	91	94	97	100	103	106	109
Rehabilitation and palliative care	18	21	24	24	25	25	26	26	27	27
Pharmaceuticals: new/innovative drugs	5	–	21	26	32	38	44	50	56	62
Services of General Economic Interest (ΥΓΟΣ)	37	38	39	42	42	43	44	45	46	47
Total GHS gross healthcare expenditure	1 699	1 921	2 028	2 121	2 199	2 279	2 358	2 440	2 524	2 610

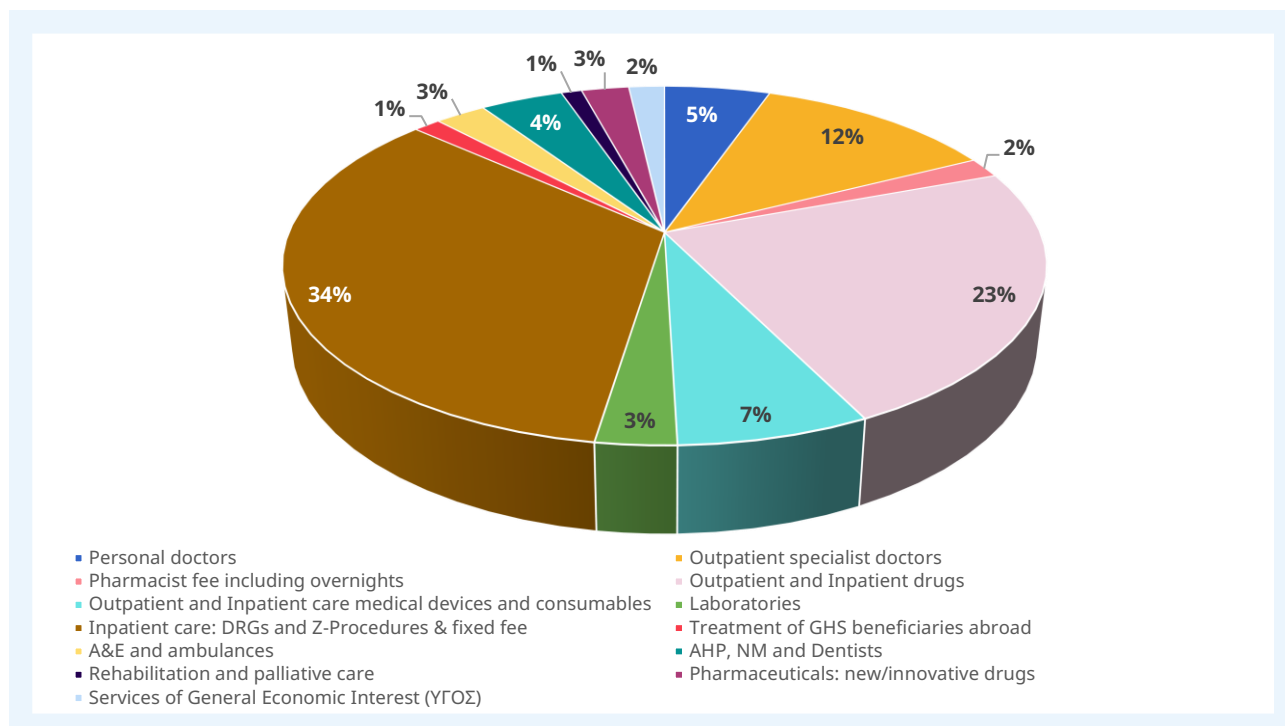
Figures 6.3 to 6.5 show the breakdown of GHS benefits expenditure by healthcare category in year 2024, 2028 and 2033 respectively.

► **Figure 6.3. Breakdown of GHS benefits expenditure, by healthcare category, 2024**
(percentages)



► **Figure 6.4. Breakdown of GHS benefits expenditure, by healthcare category, 2028**
(percentages)



► **Figure 6.5. Breakdown of GHS benefits expenditure, by healthcare category, 2033**
(percentages)

It follows from figures 6.3 to 6.5 that the evolution of pharmaceuticals expenditure (including outpatient and inpatient drugs, as well as medical devices and consumables) is expected to influence the distribution of total GHS benefits expenditure across healthcare categories. Overall, the relative shares of certain categories, other than pharmaceuticals, are projected to decline slightly, with this shift becoming apparent in 2025. In particular, the share of inpatient care (DRGs and fixed-fee procedures) is projected to decrease from 37 per cent in 2024 to 34 per cent in 2025. Conversely, the proportion attributable to pharmaceuticals expenditure is projected to increase from 26 per cent to 31 per cent over the same period. From 2026 onwards, the percentage allocation of the total GHS benefits expenditure by healthcare category is projected to be at a stable level.

Table 6.9 presents the projection of inpatient benefits expenditure by service type over the projection period from 2024 to 2033.

► **Table 6.9. Projection of inpatient benefits expenditure, by service type, 2024–2033**
(in millions of euros)

Inpatient projected expenditure	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Z-Procedures & fixed fee	70	70	73	76	79	82	85	88	91	95
DRGs	553	587	616	644	669	694	718	744	771	798
Total Inpatient expenditure	623	657	689	720	748	776	803	832	862	893

Table 6.10 presents the projection of benefits expenditure for outpatient pharmacies and pharmaceuticals for outpatient and inpatient care, by service over the projection period from 2024 to 2033.

► **Table 6.10. Projection of benefits expenditure, outpatient pharmacies and pharmaceuticals for outpatient and inpatient care, by service, 2024–2033**
(in millions of euros)

Projected expenditure	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Pharmacist fees	35	36	36	38	39	40	42	43	44	46
Pharmacist fees per overnight	1	1	1	1	1	1	1	1	1	1
Outpatient: drugs Phase I	159	166	173	179	185	190	196	202	209	215
Outpatient: drugs Phase II	107	171	177	183	190	196	202	209	215	223
Outpatient: medical devices and consumables	15	17	18	20	20	21	22	22	23	24
Inpatient care: Z-consumables and medical devices	98	113	120	125	131	136	140	146	151	156
Inpatient care: Z-drugs	55	128	132	139	144	150	155	160	166	171
Additional Phase II: new/innovative drugs	5	–	21	26	32	38	44	50	56	62
Total expenditure	475	632	678	711	742	772	802	833	865	898

Table 6.11 presents the projection of benefits expenditure for dentists, allied health professionals and nurses & midwives, over the projection period from 2024 to 2033.

► **Table 6.11. Projection of benefits expenditure, dentists, allied health professionals and nurses & midwives, by category, 2024–2033** (in millions of euros)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Dentists	13	14	14	14	15	16	16	16	17	17
Nurses & midwives	3	3	4	4	4	4	4	5	5	5
Physiotherapists, occupational therapists and speech therapists	37	47	51	55	57	58	60	62	64	66
Clinical psychologists and clinical dieticians	12	14	16	18	18	19	20	20	20	21
Total expenditure	65	78	85	91	94	97	100	103	106	109

6.2.4. Projection of administrative expenses

The actual cost of administrative expenses for the years 2022, 2023 and 2024 was 1.2 per cent, 1.5 per cent and 1.4 per cent of total GHS income respectively. As mentioned above, the administrative expenses are currently covered by the GHS Fund and they are projected to increase over the next couple of years, reaching to 1.6 per cent in 2025 and to 2.1 per cent in 2026. For the rest of the projection period administrative expenses are projected to remain relatively stable in the range of 2.0 to 2.3 per cent.

Table 6.12 shows the projection of administrative expenses by category over the projection period from 2024 to 2033.

► **Table 6.12. Projection of administrative expenses, by category, 2024–2033** (in millions of euros)

Administrative projected expenditure	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Staff expenses	7	10	12	13	14	14	14	14	14	14
Operation expenses	17	21	24	24	25	25	25	26	27	27
Development expenses	1	1	7	10	12	12	13	13	13	14
Contingencies	–	0	0	0	0	0	0	0	0	0
Total administrative expenses	25	32	43	47	51	51	52	53	54	55
Administrative expense ratio (%)	1.4	1.6	2.1	2.2	2.3	2.2	2.2	2.1	2.1	2.0

6.2.5. Projection of reserve and reserve ratio

The projection of the revenue and expenditure components of the GHS and the evolution of the reserve of the GHS are presented in table 6.13.

Table 6.13 shows the projected financial situation of the GHS over the projection period from 2024 to 2033.

► **Table 6.13. Projected financial situation of GHS, 2024–2033** (in millions of euros)

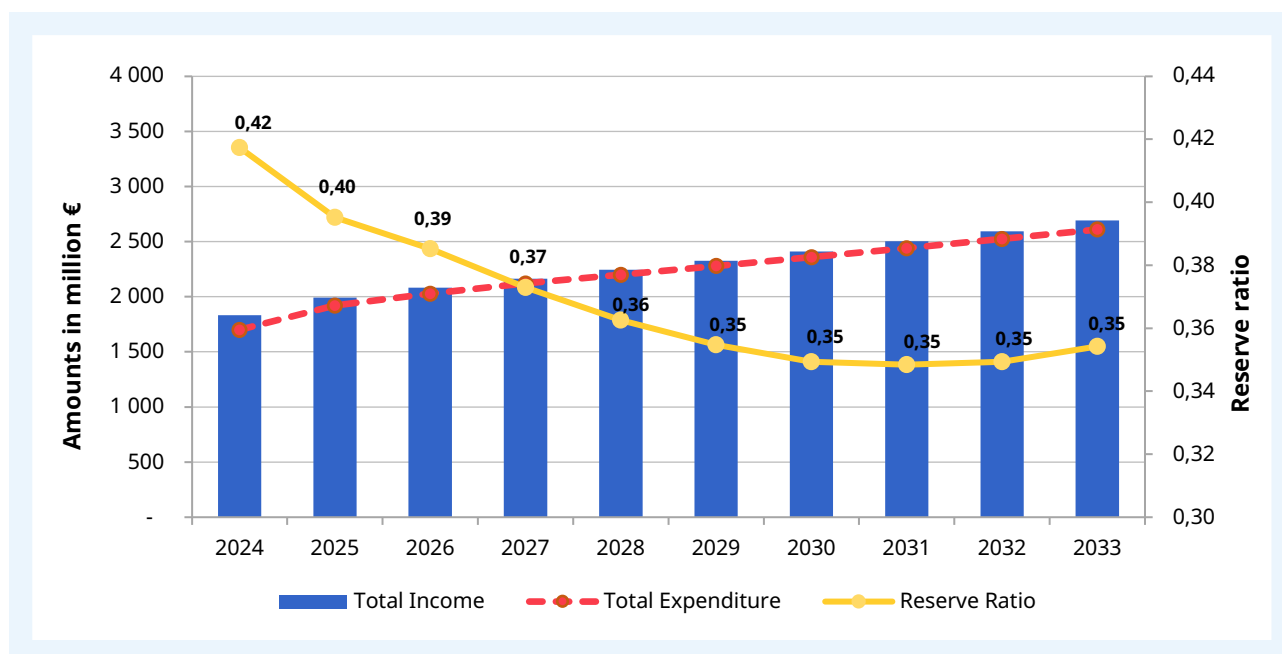
Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Reserve (start of year)	594	709	759	781	791	797	808	824	850	882
Total GHS income	1 832	1 993	2 081	2 165	2 243	2 326	2 411	2 503	2 594	2 691
Total GHS benefits expenditure	1 699	1 921	2 028	2 121	2 199	2 279	2 358	2 440	2 524	2 610
Total other income	7	10	12	13	13	15	15	16	16	17
Total administrative expenses	25	32	43	47	51	51	52	53	54	55
Surplus/Deficit	115	50	22	10	6	11	16	26	32	43
Reserve (end of year)	709	759	781	791	797	808	824	850	882	925
Reserve ratio	0.42	0.40	0.39	0.37	0.36	0.35	0.35	0.35	0.35	0.35
Administrative expense ratio (%)	1.4	1.6	2.1	2.2	2.3	2.2	2.2	2.1	2.1	2.0
Total GHS benefits expenditure/Nominal GDP (%)	5.1	5.5	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4

Following are the main points from table 6.13:

- The reserve ratio at the end of the projection period, i.e., in year 2033, is projected to be at an adequate level of 0.35, above four months' expenditure. It can thus be concluded that the existing schedule of the legislated contribution rates is sufficient to ensure the long-term sustainability of the GHS.
- Over the whole period of projection, total GHS income alone is sufficient to meet the GHS annual expenditure.
- Over the period 2024–2029, there is a downward trend in the reserve and the reserve ratio. This is due to the fact that total GHS benefits expenditure is projected to grow at a faster rate than that of contributions, primarily to the overall growth in pharmaceutical expenditure, mainly driven by the introduction of new and innovative drugs in both inpatient and outpatient care – around €113 million in 2025 increasing to around €135 million in 2026, together with the continued upward trend in GHS benefits expenditure, particularly for allied health professionals and inpatient services.
- From 2029 onwards, the reserve ratio is projected to remain stable at an adequate level, above four months' expenditure, reflecting broadly aligned growth rates between total GHS revenues and expenditures.

Figure 6.6 shows graphically the evolution of the total income, total expenditure and the reserve ratio of the GHS for 2024–2033.

► **Figure 6.6. Total income, total expenditure and reserve ratio of the GHS, 2024–2033** (in millions of euros)



It follows from figure 6.6 that contributions are sufficient to support the scheme's expenditures for the whole projection period, thus ensuring the maintenance of a constantly positive reserve. Moreover, the GHS reserve is sufficient to cover four months' expenditure over the whole projection period.

► 7. Reconciliation with the previous valuation

7.1. Introduction

The results presented in this report were reconciled with those previously projected in the actuarial valuation as at 31 December 2022, to determine the effects of the changes that affect the projections. The indicators used for the reconciliation are the reserve and the reserve ratio, which are the GHS Fund accumulated surplus and the ratio of the level of reserve at the end of one year to the level of GHS expenditure for the same year, respectively.

The sources of difference of results observed at the two valuation dates, which are discussed below, are separated as:

- amendments in the GHS Law and other relevant laws;
- methodological improvements made to the projection model;
- GHS experience for the year 2023 affecting the starting data of the report as at 31 December 2023; and
- changes made to the key actuarial assumptions.

7.2. Amendments to the legislation

Over the period from the last actuarial valuation to the end of 2023, there has been no amendment to the legal provisions governing the GHS.

7.3. Methodological improvements to the projection model

In principle, there were no methodological changes to the pension projection model used for the previous actuarial valuations.

7.4. Experience update, 2022–23

The projections made in the 2022 actuarial report were compared with the results published in the financial statements for the year 2023. Those results were adjusted so that they could be presented on the same basis as those of the present actuarial report, that is by assuming that expenditure amounts are disbursed as soon as they are encumbered, and contribution amounts are received as soon as they are due.

Table 7.1 shows the results of that comparison.

► **Table 7.1. Changes in GHS reserves, 2022–23** (in millions of euros)

	Actual	Expected	Difference	
	2023	2023	In millions of euros	Deviation (%)
Reserves as at 31 December 2022	436	436	0	0.0
Plus contributions	1 534	1 534	0	0.0
Plus co-payments & contributions I	51	51	0	0.0
Discounts from pharmaceutical companies	48	48	0	0.0
Income from healthcare services to EU citizens	18	18	0	0.0
Other income & admin income	6	6	0	0.0
Minus healthcare expenditures	1 474	1 479	–5	–0.3
Other expenditure	2	0	2	N/A
Minus administration expenditures	22	22	0	0.0
Net financing income (expense)	0	0	0	0.0
Reserves as at 31 December 2023	594	591	3	0.5

7.4.1. GHS Income

GHS income consists of contributions, copayments, contributions I, discounts from pharmaceutical companies, income from healthcare services to EU citizens and other income. The total GHS income collected in 2023 was €1,657 million, which is the same as the income projected in 2022 actuarial valuation.

7.4.2. GHS Expenditure

GHS expenditure consists of healthcare expenditure, administration expenditure, net financing income expense and other expenditure. The total GHS expenditure in 2023 amounted to €1,417 million, which is 0.2 per cent lower than projected. This variance primarily reflects healthcare expenditure categories that were collectively projected to be €5 million higher than the actual 2023 healthcare expenditures, as well as additional “other expenditure” relating mainly to excess GHS contribution refunds. The latter item had not been anticipated in the 2022 actuarial valuation, whereas an amount of €2 million was recorded in 2023.

7.5. Changes in assumptions

Table 7.2 summarizes the key demographic and economic assumptions used in this report compared with those used in the 2022 actuarial valuation report. These assumptions concern:

- **Fertility rate:** In this report, the fertility rate is 1.45 children per woman in 2024, increasing gradually to 1.47 in 2032. These assumed fertility levels are higher than those adopted in the 2022 valuation, which envisaged a total fertility rate of 1.39 children per woman in 2024, rising gradually to 1.41 by 2032.
- **Life expectancy:** In this report, the life expectancies assumed for both males and females are 81.1 and 85.0 in 2024 increasing to 82.3 and 86.2 years respectively by 2032. These assumed life expectancies are slightly higher than those adopted in the 2022 valuation.
- **Net migration:** In the 2022 actuarial valuation, net migration was projected at 10,000 persons in 2024, gradually decreasing to 8,750 by 2032, with an average of 9,144 over the period 2024–2032.

In the present valuation, net migration is assumed to start at a higher level, at 11,100 in 2024, declining to 9,100 by 2032, with an average of 9,900 over the same period 2024–2032.

- **Real GDP growth:** In this report, the assumed real GDP growth rate is 3.6 per cent in 2024, declining to 1.9 per cent by 2032. By comparison, the 2022 actuarial valuation assumed real GDP growth of 3.5 per cent in 2024, decreasing to 2.0 per cent in 2032.
- **Labour force participation rates:** The assumed aggregate male and female labour force participation rates commence at approximately the same levels in this valuation as in the 2022 actuarial valuation; however, their subsequent evolution is more moderate over the period to 2032. In the 2022 valuation, the male participation rate was projected to increase from 84.3 per cent in 2024 to 84.6 per cent in 2032, while the female rate was expected to rise from 76.0 per cent to 76.4 per cent over the same period. In the present report, the male participation rate is assumed to move from 84.3 per cent in 2024 to 84.1 per cent in 2032, and the female rate from 75.0 per cent in 2024 to 75.8 per cent in 2032, reflecting a slightly less pronounced upward trajectory.
- **Unemployment rate:** In this report, the unemployment rate is assumed to marginally increase from 5.1 per cent in 2024 to 5.3 per cent in 2032, while in the 2022 actuarial valuation it was assumed to start at a higher level, 5.5 per cent in 2024, decreasing to 5.3 per cent in 2032.
- **Price inflation:** In this report, the price inflation is assumed to decline gradually from 2.3 per cent in 2024 to 2.0 per cent in 2032, broadly consistent with the 2022 actuarial valuation, which assumed a reduction from 2.5 per cent in 2024 to 2.0 per cent in 2032.
- **Real wage increase:** In this report, the assumed rate of real wage growth declines from 1.6 per cent in 2024 to 0.8 per cent in 2028 and then remains stable for the rest of the projection period. By contrast, in the 2022 actuarial valuation, real wage growth was assumed to rise from 1.2 per cent in 2024 to 1.6 per cent in 2028, before easing back to 1.2 per cent by 2032.

Some other GHS-specific assumptions, which are described in Annexes 3 and 4, were slightly changed. In particular, the assumed invalidity incidence rates in the present valuation compared to the 2022 valuation for males are on average lower by a factor of 10 per cent, whereas those for females are on average higher by a factor of 5 per cent.

► **Table 7.2. Changes to key assumptions: 2023 versus 2022 actuarial valuations**

Assumption	Year	Actuarial report as at 31 December 2023		Actuarial report as at 31 December 2022	
Total fertility rate	2024	1.45		1.39	
	2028	1.46		1.40	
	2032	1.47		1.41	
		Males	Females	Males	Females
Life expectancy at birth	2024	81.1	85.0	80.9	84.9
	2028	81.7	85.7	81.4	85.4
	2032	82.3	86.2	82.0	85.9
Net migration	2024	11 100		10 000	
	2028	9 800		9 000	
	2032	9 100		8 750	

Assumption	Year	Actuarial report as at 31 December 2023		Actuarial report as at 31 December 2022	
Real GDP growth rate (%)	2024	3.6		3.5	
	2028	2.1		2.7	
	2032	1.9		2.0	
		Males	Females	Males	Females
Labour force participation rates (15–64) (%)	2024	84.3	75.0	84.3	76.0
	2028	84.0	75.3	84.5	76.3
	2032	84.1	75.8	84.6	76.4
Unemployment rate (15–64) (%)	2024	5.1		5.5	
	2028	5.3		5.4	
	2032	5.3		5.3	
Price inflation (%)	2024	2.3		2.5	
	2028	2.0		2.0	
	2032	2.0		2.0	
Real wage increase (%)	2024	1.6		1.2	
	2028	0.8		1.6	
	2032	0.9		1.2	
Real rate of return (%)	2024	1.6		0.3	
	2028	0.8		0.5	
	2032	0.3		0.3	

7.6. Reconciliation results

Tables 7.3 and 7.4 show the results of the reconciliation between the previous actuarial valuation and present valuation. Tables 7.3 and 7.4 show the effect of the various factors on the reserve and the reserve ratio respectively.

Amendments: There have been no amendments in the legislation since the last actuarial valuation so there is no impact on the results between the two valuations due to amendments in the Law.

Experience update: The experience update for the year 2023 had the effect of increasing the reserve by €3 million all the years of the projection.

Changes in assumptions: The overall impact of changes to the projection assumptions had the effect of increasing both the reserve and the reserve ratio in 2024, by €62 million and 0.04 percentage points respectively. By 2032, these changes are projected to result in a €57 million increase in the reserve, with no change in the reserve ratio, indicating that expenditure is expected to grow at broadly the same rate as reserves over the period to 2032. The detailed impact of these assumption changes is set out below:

- With respect to demographic assumptions, the higher net migration projected over the period 2024–2032 in the 2023 (present) actuarial valuation, relative to the 2022 actuarial valuation, causes increases to both the reserve and the reserve ratio throughout the projection period.
- With respect to economic assumptions, the higher projection starting point concerning contribution income in the present (2023) actuarial valuation – reflecting stronger-than-anticipated contribution income inflows over 2022–2025, driven by a larger employed GHS-contributing population, positive labour market developments, higher contributory earnings reflecting positive evolution of wages, and a lower unemployment rate – results in a noticeable increase in both the reserve and the reserve ratio over the period 2025–2032. These favourable

impacts are partially countered by slightly lower projected male and female labour force participation rates and more subdued real wage growth across the projection period.

- With respect to scheme-specific assumptions, the less favourable assumptions adopted in the 2023 (present) actuarial valuation – namely higher projected utilisation rates, higher ultimate pharmaceutical expenditure driven mainly by the introduction of new and innovative drugs in both inpatient and outpatient care, and higher ultimate costs for allied health professionals and inpatient services – are projected to reduce both the reserve and the reserve ratio over the period 2028–2032. In particular, over 2030–2032, the reserve level is projected to be more than €100 million lower in each year than it would have been under the previous assumptions. By contrast, the relatively subdued medical inflation in the early years, is projected to increase both the reserve and the reserve ratio over the period 2024–2027.

► **Table 7.3. Reconciliation of the reserve between 2023 and 2022 actuarial valuations**

	2024	2025	2026	2027	2028	2029	2030	2031	2032
As per actuarial report as at 31.12.2022	647	634	620	622	639	671	715	766	825
I. Amendments	0	0	0	0	0	0	0	0	0
II. Experience update, 2022–23	3	3	3	3	3	3	3	3	3
III. Improvements in methodology	0	0	0	0	0	0	0	0	0
IV. Changes in assumption									
Demographic	–1	5	13	23	28	29	31	32	33
Economic	1	44	87	120	152	181	207	234	262
Scheme-specific	59	73	58	23	–25	–76	–132	–185	–241
Subtotal	59	122	158	166	155	134	106	81	54
Total of I to IV	62	125	161	169	158	137	109	84	57
As per actuarial report as at 31.12.2023	709	759	781	791	797	808	824	850	882

► **Table 7.4. Reconciliation of the reserve ratio between 2023 and 2022 actuarial valuations**

	2024	2025	2026	2027	2028	2029	2030	2031	2032
As per actuarial report as at 31.12.2022	0.38	0.34	0.32	0.31	0.31	0.32	0.33	0.34	0.35
I. Amendments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
II. Experience update, 2022–23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
III. Improvements in methodology	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IV. Changes in assumptions									
Demographic	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Economic	0.00	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.11
Scheme-specific	0.04	0.03	0.02	0.00	–0.03	–0.06	–0.08	–0.10	–0.12
Subtotal	0.04	0.06	0.07	0.06	0.05	0.03	0.02	0.01	0.00
Total of I to IV	0.04	0.06	0.07	0.06	0.05	0.03	0.02	0.01	0.00
As per actuarial report as at 31.12.2023	0.42	0.40	0.39	0.37	0.36	0.35	0.35	0.35	0.35

► 8. Sensitivity scenarios and tests

Since all projections have a degree of uncertainty, a variety of sensitivity scenarios and tests were carried out in order to measure the sensitivity of projected financial position of the GHS Fund to future changes in the demographic and economic environments as well as the activation of certain GHS institutional measures relating to its financial governance.

In order to examine the degree of sensitivity of projected results to changes in sensitivity scenario and test assumptions, two financial indicators are presented for each scenario/test, the values of which are compared with those in the base scenario. These indicators are:

- the reserve amount at each year end; and
- the reserve ratio: the ratio of the level of reserve at the end of one year to the level of expenditures for the same year.

Three sensitivity scenarios were performed on the results of the actuarial valuation to examine their sensitivity to changes in the following set of assumptions or measures:

- economic adverse scenario, resulting to lower migration, lower GDP growth rates, lower nominal wage increases, lower employment growth rates and lower labour-force participation rates from 2027 onwards, when compared to base scenario;
- introduction of new healthcare services which are not currently covered by the GHS legislation; and
- strengthening/improvement of GHS financial governance through the activation of GHS institutional measures relating to its financial governance, aimed at benefit cost containment in accordance with the GHS regulatory framework

In addition, individual sensitivity tests were performed on the results of the actuarial valuation to assess their sensitivity to changes in the following four key GHS variables which are subject to a relatively high degree of uncertainty:

- cost from the ongoing introduction of additional new/innovative drugs – additional cost level and timing;
- medical inflation: progressive growth to a higher or a lower level by 0.5 per cent over the projection period;
- progressive increases or decreases in utilization rates by ± 3 per cent to ± 5 per cent; and
- increases or decreases of inpatient utilization rates of ± 5 per cent from 2028 onwards.

Two tests were conducted for each of the individual sensitivity test assumptions. The first evaluated the effect on the results of changes less favourable for the GHS than those used in the base scenario; the second evaluated the effect of more favourable changes. The variations in assumptions tested represent a difference considered to be significant with respect to the assumptions made in the base scenario without, however, being the upper and lower limits of a probable interval of change for each variable.

A less favourable change in an assumption (Test I) typically results in a lower reserve amount and reserve ratio. A more favourable change (Test II) has the opposite effect.

Scenario for introduction of new healthcare services	
Outpatient medical devices & consumables	Additional cost of around €2m by 2029.
Clinical psychologists	Increase in the allowed visits from 2027 will lead to an increase in the expenditure up to €1.7m in 2028.
Clinical dieticians	Introduction of new category (manage obesity) from 2027 will lead to an increase in the expenditure up to €1.5m in 2028.
Introduction of private occupational specialists	Introduction of private occupational therapists from 2027 with an expenditure of €5.5 million increasing up to €18 million in 2029.
Specialised Laboratories tests	Introduction of specialised Laboratories tests from 2027 with an expenditure of €7.5 million increasing to €12 million in 2029.
Scenario for GHS Financial governance improvement	
Outpatient specialties utilization rates	–1% applied from 2027
Laboratories utilization rates	–1% applied from 2027
Outpatient Drugs Phase II cost	–1% applied from 2028
Inpatient care: DRGs point value	–1% applied from 2027
Inpatient care: Day care – DRGs point value	–1% applied from 2030
Dentists, Nurses & Midwives, Allied Health Professionals point value	–1% applied from 2027 and –2% from 2031

► **Table 8.2. Sensitivity test assumptions** (in millions of euros)

Assumption	Test I (unfavourable)	Best estimate assumptions	Test II (favourable)
Ongoing introduction of additional new/ innovative drugs	€22.4m in 2026 reaching up to €68.7m by 2033 including medical inflation	€20.4m in 2026 reaching up to €62.4m by 2033 including medical inflation	€18.4m in 2026 reaching up to €56.2m by 2033 including medical inflation
Medical inflation	Progressive growth to a higher level by 0.5 per cent	Base scenario	Progressive growth to a lower level by 0.5 per cent
Utilization rates	Progressive increase by 3 to 5 per cent for all activities/services	Base scenario	Progressive decrease by 3 to 5 per cent for all activities/services
Inpatient utilization rates	5 per cent applied from 2028 onwards	Base scenario	–5 per cent applied from 2028 onwards

8.1. Sensitivity scenarios

8.1.1. Economic adverse scenario

The present actuarial valuation is based on the prevailing economic conditions and expectations about Cyprus' economy, taking into account the relevant European Commission's forecasts along with the economic forecasts of the Ministry of Finance of Cyprus, on the measures of GDP growth, consumer price inflation, wage growth and unemployment rate, as presented in Chapter 4.

As shown in table 8.1, compared to base scenario, the economic adverse scenario is built on the assumption of a deterioration of the economy due to worsening of geopolitical tensions, which results

to lower migration, lower GDP growth, lower nominal wage growth, lower employment growth and lower labour-force participation rates over the period 2027 to 2033.

This economic adverse scenario decreases both GHS contribution income and benefits expenditure.

The contribution income decreases primarily through:

- lower employee contributory earnings, driven by lower wages and lower employed contributing population due to decrease in employment growth rates; and
- lower pension income, driven by lower wage and price pension indexation.

On the other hand, the GHS benefits expenditure decreases mainly due to lower projected beneficiaries' population driven by lower net migration.

8.1.2. Scenario for introduction of new healthcare services

The present actuarial valuation results are based on current legal provisions of the GHS and a framework of healthcare services currently covered by the GHS, which drive the future evolution of GHS benefits expenditure. Under this sensitivity scenario, it is assumed that a number of potential new healthcare services that currently are not legally covered by the GHS, will be introduced. Those potential new healthcare services, which will drive the GHS benefits expenditure downwards, are as follows:

- The introduction of new specialised outpatient medical devices and consumables, with associated expenditure projected to reach €2 million by 2029.
- The increase in the allowed number of visits to clinical psychologists from 2027, which is assumed to raise expenditure for this specialty up to €1.7 million in 2028.
- The introduction of a new obesity management category under clinical dietitians from 2027, which is projected to increase expenditure for this specialty to €1.5 million in 2028.
- The introduction of private occupational specialists from 2027 with an expenditure of €5.5 million increasing up to €18 million in 2029.
- The introduction of specialised laboratories tests from 2027 with an expenditure of €7.5 million increasing to €12 million in 2029.

8.1.3. Scenario for GHS financial governance improvement

The present actuarial valuation results are based on current legal provisions of the GHS and a framework of scheme-specific assumptions, such as utilisations rates and average claim costs, which drive the projected evolution of GHS benefits expenditure. These assumptions have been derived from an analysis of historical experience and observed trends, as well as taking into account likely future developments of each GHS healthcare service. Under this sensitivity scenario, it is assumed that a series of cost control measures is implemented in the short-term, through the activation of certain GHS institutional mechanisms relating to its financial governance. These measures are expected to exert downward pressure on GHS benefits expenditure and are summarised as follows:

- The already introduced key performance indicators for Personal Doctors, including metrics on referral behaviour, is assumed to reduce outpatient specialists and laboratory utilisation rates by 1 per cent from 2027 onwards.
- The establishment of an effective committee to review the cost of Phase II outpatient drugs is assumed to reduce unit costs, and hence related expenditure, by 1 per cent from 2028 onwards.
- The introduction of corrective measures regarding hospitals' base rate, is assumed to decrease DRGs point value by 1 per cent from 2027 onwards.

- The introduction of day-care treatment facilities is assumed to decrease DRGs point value by 1 per cent from 2030 onwards.
- The introduction of corrective measures regarding Allied Health Professionals, Nurses and Midwives and dentists' reimbursement, is assumed to reduce these services budget by 1 per cent from 2027 and to a further decrease of 1 per cent from 2031.

8.2. Sensitivity tests

8.2.1. Ongoing introduction of additional new/innovative drugs

Due to the uncertainty regarding the determination of the assumption related to the cost of the ongoing introduction of additional new or innovative drugs, it is necessary to test the sensitivity of GHS projected financial position to changes in this assumption. The base scenario assumes that the ongoing introduction of additional new or innovative drugs will lead to an expenditure of €20.4 million in 2026, increasing over the projection period to reach €62.4 million by 2033.

In Test I (unfavourable), the cost from the ongoing introduction of additional new/innovative drugs is higher than that assumed under the base scenario, primarily due to a higher volume of those drugs, a higher price of those drugs, or lower discounts gained from pharmaceutical providers. In Test II (favourable), the cost of the ongoing introduction of additional new/innovative drugs is lower than that assumed under the base scenario, primarily due to a lower volume or price of those drugs, or higher discounts gained from pharmaceutical providers.

In Test I (unfavourable), the assumed cost from the ongoing introduction of additional new or innovative drugs will lead to an expenditure of €22.4 million in 2026, increasing over the projection period to reach €68.7 million by 2033, including medical inflation. By contrast, in Test II (favourable), the assumed cost of the ongoing introduction of additional new or innovative drugs will lead to an expenditure of €18.4 million in 2026, increasing over the projection period to reach €56.2 million by 2033, including medical inflation.

8.2.2. Medical inflation

Based on the analysis of historical data and of likely future trends in medical inflation, the base scenario uses an assumption on the evolution of medical inflation for each healthcare service, as presented in table 5.11 of Chapter 5.

A possible increase in the consumer price inflation or the cost of healthcare services (Test I) could drive medical inflation at higher levels. By contrast, a possible decrease in the consumer price inflation or the cost of healthcare services (Test II) has the opposite effect.

In Test I (unfavourable), the assumed medical inflation evolves at a higher rate than that assumed under the base scenario, progressively reaching to a higher level by 0.5 per cent by 2032, and thus putting an upward pressure to GHS benefits expenditure. By contrast, in Test II (favourable), the assumed medical inflation evolves at a lower rate, progressively reaching to a lower level by 0.5 per cent by 2032, and thus putting a downward pressure to GHS benefits expenditure.

8.2.3. Increases or decreases in utilization rates

Based on the analysis of historical data and of likely future trends in utilization rates, the base scenario uses an assumption of utilization rates by age group and gender for each healthcare service, as presented in Chapter 5 and Annex 4.

A possible increase in the morbidity rates or an increased demand in specialties/services (Test I) could result in an increase of utilization rates in those specialties, thus driving the GHS benefits expenditure at higher levels. A possible downward change in the morbidity rates or a decreased demand in specialties/services (Test II) has the opposite effect.

Test I (unfavourable) assumes a progressive increase of 3 to 5 per cent in all utilization rates depending on the activity/service up to 2028 or 2029 respectively. By contrast, Test II (favourable), assumes a progressive decrease of 3 to 5 per cent in all utilization rates depending on the activity/service up to 2028 or 2029 respectively.

8.2.4. Increases or decreases in inpatient utilization rates

Based on the analysis of historical data and of likely future trends in Inpatient utilization rates, the base scenario uses an assumption of utilization rates by age group and gender for each Inpatient healthcare service, as presented in Chapter 5 and Annex 4.

Due to the uncertainty of the results as the inpatient utilization rates are not yet stabilized and due to the affiliation of the new private hospitals, a possible increase in the morbidity rates or an increased demand in inpatient specialties/services (Test I) could result in an increase of utilization rates, thus driving the GHS benefits expenditure at higher levels. A possible downward change in the morbidity rates or a decreased demand in inpatient specialties/services (Test II) has the opposite effect.

Test I (unfavourable) assumes a 5 per cent increase in inpatient utilization rates from 2028 onwards. By contrast, Test II (favourable), assumes a decrease of 5 per cent in utilization rates from 2028 onwards.

8.3. Test results

The following sub-sections present the results of each sensitivity scenario and test compared to base scenario. For each sensitivity scenario and test, the values of the financial indicators of reserve amount and reserve ratio, are presented and compared with the respective figures under the base scenario over the projection period from 2024 to 2033.

8.3.1. Sensitivity scenarios results

Table 8.3 shows the financial situation of the GHS under the base scenario compared to the two sensitivity scenarios described in sub-sections 8.1.1, 8.1.2 and 8.1.3 over the period 2024–2033.

As described in section 8.1.1, the economic adverse scenario assumes a deterioration of the economy compared to base scenario and this decreases both GHS income and expenditure. As it is illustrated by table 8.3, such a scenario decreases the GHS income more than the GHS benefits expenditure, and thus causes a reduction in the reserve of up to 30 per cent in 2033, when compared to the base scenario. Nevertheless, at the end of the projection period, i.e., 2033, the available amount of reserve remains sufficient to cover almost three months' expenditure.

Under the sensitivity scenario for the introduction of new healthcare services, the projected financial position of the GHS, as measured by the level of reserve and the reserve ratio, deteriorate when compared to the base scenario results. It follows from table 8.3 that the level of reserve at the end of the projection period, i.e., 2033, is by 24 per cent lower than that of the base scenario. Additionally, the reserve ratio indicates that the reserve is sufficient to cover at least three months of GHS expenditure throughout the projection period. This sensitivity scenario shows that even by introducing some new healthcare services under GHS, the GHS reserve will be maintained at an adequate level.

Under the sensitivity scenario of strengthened GHS financial governance, achieved through the activation of institutional measures related to its financial governance, the projected financial position

of the GHS – as measured by the level of reserves and the reserve ratio – improves relative/when compared to the base scenario results. As shown in table 8.3, the reserve at the end of the projection period, i.e. 2033, is projected to be approximately 18 per cent higher than under the base scenario. Furthermore, the reserve ratio indicates that the reserve is sufficient to cover at least four-and-a-half months of GHS expenditure throughout the projection period, rising to more than five months' expenditure by 2033. This sensitivity scenario shows that by adopting even small corrective measures, the HIO could restrain the expenditure of the GHS and increase GHS reserve to a level that would create conditions for further development of the GHS and provide security and confidence that even in an adverse event the GHS will have the proper reserve amount.

► **Table 8.3. Results of sensitivity scenarios**

Scenario/Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Reserve amount at year end (in millions of euros)										
Base scenario	709	759	781	791	797	808	824	850	882	925
Economic adverse scenario	709	759	781	784	777	765	747	722	687	644
Scenario for introduction of new healthcare services	709	759	781	777	759	736	718	708	702	706
Scenario for GHS financial governance improvement	709	759	781	804	826	853	897	953	1 016	1 092
Reserve ratio (percentages)										
Base scenario	0.42	0.40	0.39	0.37	0.36	0.35	0.35	0.35	0.35	0.35
Economic adverse scenario	0.42	0.40	0.39	0.37	0.35	0.34	0.32	0.30	0.27	0.25
Scenario for introduction of new healthcare services	0.42	0.40	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.27
Scenario for GHS financial governance improvement	0.42	0.40	0.39	0.38	0.38	0.38	0.38	0.40	0.41	0.42

8.3.2. Sensitivity tests results

Table 8.4 shows the projected financial situation of the GHS under the base scenario compared to that of each of the eight individual sensitivity tests, representing one favourable and one unfavourable test with respect to each of the four GHS variables tested. Details of the above sensitivity tests are described in sub-sections 8.2.1 to 8.2.4.

The first variable tested is the cost of the ongoing introduction of additional new/innovative drugs. Under Test I (unfavourable), a cost of the above products higher than that assumed under the base scenario, results in reduced levels of reserve at the end of the projection period, by a 4 per cent lower level compared to that of the base scenario. On the other hand, under Test II (favourable), a cost of the above products lower than that assumed under the base scenario, results in increased levels of reserve at the end of the projection period, by a 4 per cent higher level compared to that of the base scenario, covering four-and-a-half months' expenditure.

The above results show that the HIO will have to carefully examine the relevant catalogue of drugs and introduce them in a manner so as not to disturb the scheme's financial sustainability. Moreover, the results show that if the HIO handles the negotiations in a manner that could gain as many discounts as

possible from the pharmaceutical companies, this could lead to a higher reserve than that calculated under the base scenario.

The second variable tested is the medical inflation. An assumed medical inflation which progressively leads to a higher level by 0.5 per cent than that of base scenario, results in a reduction of the reserve to €711 million in 2033 compared to €925 million under base scenario, representing a decrease of 23 per cent, while the reserve by 2033 is sufficient to cover three months' expenditure. On the other hand, an assumed medical inflation which progressively leads to a lower level by 0.5 per cent than that of base scenario, results in an increase of the reserve to €1,135 million in 2033, representing an increase of 23 per cent compared to base scenario, while at the end of the projection period the reserve is sufficient to cover more than five months' expenditure. The above tests indicate that the GHS financial sustainability is very sensitive to fluctuations in medical inflation.

The third variable which was tested is the utilization rates. An increase in the utilization rates results in a reduction of the reserve to €495 million in 2033, compared to €925 million under the base scenario, representing a decrease of 46 per cent. Additionally, in 2033 the reserve is sufficient to cover slightly above two months' expenditure. On the other hand, a decrease in the utilization rates results in an increase of the reserve to €1,248 million in 2033, representing an increase of 35 per cent compared to the base scenario, while at the end of the projection period the reserve is sufficient to cover more than five-and-a-half months' expenditure. The above results indicate that the reserve is very sensitive to changes in the utilization rates.

The fourth variable which was tested is the inpatient utilization rates. An increase in the inpatient utilization rates results in a reduction of the reserve to €573 million in 2033, compared to €925 million under the base scenario, representing a decrease of 38 per cent, while at the end of the projection period the reserve is sufficient to cover only two-and-a-half months' expenditure. On the other hand, a decrease in the utilization rates results in an increase of the reserve to €1,276 million in 2033, representing an increase of 38 per cent compared to the base scenario, while at the end of the projection period the reserve is sufficient to cover almost six months' expenditure. The above results indicate that the reserve is very sensitive to changes in the utilization rates.

► **Table 8.4. Results of sensitivity tests**

Sensitivity/Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Reserve amount at year end (in millions of euros)										
Base scenario	709	759	781	791	797	808	824	850	882	925
Introduction of additional new/innovative drugs (higher expenditure)	709	759	779	786	789	796	808	829	855	891
Introduction of additional new/innovative drugs (lower expenditure)	709	759	783	795	805	820	840	871	909	958
Medical inflation: progressive increase of +0.5%	709	759	780	785	782	776	765	753	734	711
Medical inflation: progressive decrease of -0.5%	709	759	782	797	813	841	883	946	1 028	1 135
Increase in utilization rates	709	759	764	739	692	646	599	560	524	495
Decrease in utilization rates	709	759	798	838	878	925	989	1 066	1 150	1 248

Sensitivity/Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Increase in Inpatient utilization rates	709	759	760	748	709	673	638	612	588	573
Decrease in Inpatient utilization rates	709	759	802	833	885	944	1 010	1 088	1 175	1 276
Reserve ratio (%)										
Base scenario	0.42	0.40	0.39	0.37	0.36	0.35	0.35	0.35	0.35	0.35
Introduction of additional new/innovative drugs (higher expenditure)	0.42	0.40	0.38	0.37	0.36	0.35	0.34	0.34	0.34	0.34
Introduction of additional new/innovative drugs (lower expenditure)	0.42	0.40	0.39	0.38	0.37	0.36	0.36	0.36	0.36	0.37
Medical inflation: progressive increase of +0.5%	0.42	0.40	0.38	0.37	0.35	0.34	0.32	0.30	0.28	0.27
Medical inflation: progressive decrease of –0.5%	0.42	0.40	0.39	0.38	0.37	0.37	0.38	0.39	0.42	0.45
Increase in utilization rates	0.42	0.40	0.37	0.34	0.31	0.28	0.25	0.22	0.20	0.18
Decrease in utilization rates	0.42	0.40	0.40	0.40	0.41	0.41	0.43	0.45	0.47	0.49
Increase in Inpatient utilization rates	0.42	0.40	0.37	0.35	0.32	0.29	0.27	0.25	0.23	0.22
Decrease in Inpatient utilization rates	0.42	0.40	0.40	0.40	0.41	0.42	0.44	0.46	0.48	0.50

► 9. Conclusions and recommendations

The financial projections indicate that the GHS Fund is financially sustainable over the period 2024–2033 under the legislated schedule of contribution rates. Over the projection period there is a small ageing effect which does not materially alter the projected financial position of the GHS. Therefore, considering the reserve, contribution rates are assessed to be appropriate to sustain the scheme financially in the short and medium term, and thus ensuring the maintenance of a constantly positive reserve.

The projected reserve ratio remains positive throughout the projection period, indicating the sufficiency of the annual income to cover the annual expenditures. However, from year 2024 to 2029, a downward trend is observed in the reserve ratio. This is primarily due to the overall growth in pharmaceutical expenditure, mainly driven by the introduction of new and innovative drugs in both inpatient and outpatient care, together with the continued upward trend in GHS benefits expenditure, particularly for allied health professionals and inpatient services.

Over the period 2029–2033, the reserve ratio is projected to remain stable at an adequate level, above four months' expenditure, reflecting broadly aligned growth rates between total GHS revenues and expenditures. Throughout the projection period 2024–2033, the reserve ratio indicates that the accumulated reserve can cover more than four months' expenditure.

Given the recent implementation of the HIO, the short historical series of data available to obtain stability in key GHS variables as well as the high degree of uncertainty associated with the projected financial results of the present actuarial valuation, as illustrated by sensitivity analyses, it is essential that the financial position of the GHS Fund is monitored closely and on a regular basis, so that, where necessary, corrective measures are taken in a timely manner.

In particular, the following endogenous measures, as illustrated by sensitivity analysis, would have greater financial impact than others and could reduce the risk that reserve would not be enough to face unexpected expenditures that could disrupt the financial sustainability of the GHS Fund:

- the gradual introduction of new /innovative drugs, based on a thorough assessment for value added; and
- the constrain of overutilization of services/activities, especially with regards to the inpatient services.
- strengthening/improvement of GHS financial governance through the activation of institutional measures aimed at containing benefit costs, in line with the regulatory framework governing the GHS

Given the uncertainty of results, in the context of a sound financial governance of the GHS, it is recommended that the HIO makes the necessary provisions for maintaining an adequate reserve ratio, taking into account the desired level of reserve of its Board of Directors, necessary to safeguard the GHS against potential future financial risks associated with events of sudden adverse economic and morbidity developments.

The main role of the reserve, as in all social security health insurance schemes providing short term benefits, is to cover potential annual deficits in cases where the annual cash flow balance is temporarily reversed, i.e., the annual expenditure is higher than revenues, primarily due to events of sudden adverse economic and morbidity developments. Therefore, in the short-term, it is reasonable and appropriate for the HIO to maintain a higher reserve ratio than the benchmark level of two months (16.7 per cent) of annual healthcare expenditure, which is typically held by mature, well-established

social security healthcare programmes, primarily to cover potential annual deficits. Those deficits are anticipated to incur since the GHS is at its early stages of maturity and over the next few years new services and new providers are expected to be introduced.

► 10. Actuarial opinion

This Report was prepared as requested under the provisions of Part II, Article 4(2)(e), of The General Healthcare System Law of 2001 (N.89(I)/2001). In our opinion:

- a. the data upon which the report is based are sufficient and reliable;
- b. the assumptions used for the report are reasonable and appropriate both in the aggregate and individually; and
- c. the methodology employed is appropriate and consistent with accepted actuarial practice.

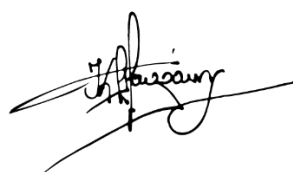
Based on the results of this valuation, we hereby certify that, under the current GHS provisions, the GHS is financially sustainable over the period covered by the projections in this Report. The above projections assume no policy change in terms of adding new GHS healthcare services other than those which had been anticipated to be introduced at the time of writing this report. This means that the initial reserve plus future projected income of GHS is sufficient to support projected GHS benefits and administrative expenses over the projection period, when considering the applicable financing rules and the projected future demographic and economic environment in which GHS will operate.

This report has been prepared and our opinions provided in accordance with internationally accepted actuarial practice as provided by the International Standard of Actuarial Practice 2: Financial Analysis of Social Security Programs.

10 June 2026



André Picard FSA, FCIA



Costas Stavrakis FIA, FCAA

► Annex 1. Design features of the GHS

A1.1. Brief history

The Health Insurance Organization (HIO) was established by virtue of the Law No. 89(I) 2001 as a legal entity governed by public law for the implementation of the General Healthcare System (GHS) in the Republic of Cyprus. HIO implemented the first phase of the new GHS in June 2019, which unified a previously fragmented system, as well the second phase of the new GHS in June 2020. Under the new system, some responsibilities of the Ministry of Health shifted to the HIO, which serves as the single purchaser of services from both public and private providers.

The HIO is governed by a Board of Directors in which the Government, the employers, the employees and the patients are represented. In accordance with the General Healthcare System Laws of 2001 to 2023 the Organization is the executive authority for the implementation of the GHS. The Law stipulates the philosophy, system-architecture and main features of the GHS.

A1.2. Covered population

Under the previous system, in 2019, only around 80 per cent of the population were technically considered to be covered free of charge. The GHS aims to provide universal health coverage for all legal residents as described in the following paragraph. For the first time, migrants will have the same healthcare coverage as all Cypriots and EU citizens, reducing or even eliminating the disadvantages of the previous system, in which people were dependent on private health insurance.

Therefore, the GHS covers the following categories of beneficiaries:

- Citizens of the Republic of Cyprus who have their ordinary residence in the areas controlled by the Government of the Republic of Cyprus.
- European Union Citizens who have their ordinary residence and either work or have acquired the right of permanent residence in the Republic of Cyprus.
- Third-country Citizens who have their ordinary residence in the Republic of Cyprus and have acquired legally either the right of permanent residence or the right to equal treatment in the sectors of social insurance, according to the provisions of the Cyprus National Law.
- Other categories (such as refugees) under certain conditions.
- Persons who are family members of the first two points or persons who are family members of the third point and who have also acquired legally the right of permanent residence.

Family members are the spouse of the beneficiary and the children under the age of 21, or over the age of 21 who are dependent on them or their spouse, as determined by Regulations.

A1.3. Healthcare services under the General Healthcare System

All beneficiaries have access to the same healthcare services covered by the GHS. The healthcare services covered are described in table A1.1.

► **Table A1.1. Healthcare services covered by the GHS, by implementation date**

Date implemented	Healthcare service
1 June 2019	Personal doctors for adults and children
	Specialist doctors for outpatient care
	Pharmacies and pharmaceuticals for outpatient care (Phase I Drugs: Generics/Off Patent and MeToo)
	Laboratories for outpatient care
1 June 2020	Inpatient care
1 September 2020	Accident and emergency care, ambulance services and Phase II Drugs (Innovative/high-cost Drugs)
1 December 2020	Dentists for preventive dental care
	Nurses and allied health professionals: physiotherapists, clinical psychologists, clinical dietitians, speech therapists, occupational therapists for outpatient care
1 October 2021	Midwives
1 January 2022	Palliative care
1 January 2023	Institutional rehabilitation services
1 November 2023	Allied health professionals: podologists for outpatient care

As a general principle, the GHS covers only prescribed pharmaceuticals and vaccines. The HIO reimburses fully the cheapest pharmaceuticals based on its active-ingredient-group or/and its therapeutic-class-group. It is noted that this does not apply for innovative/high-cost drugs. Pharmaceuticals not covered by GHS are non-prescribed drugs and lifestyle drugs.

Under the GHS, a referral is needed to access certain healthcare services. These are: outpatient specialists, laboratories, pharmacies, nurses, allied health professionals and hospitals for inpatient services. In case where a beneficiary visits directly an outpatient specialist without a referral from his/her personal doctor, a personal contribution is paid, as explained in section A1.5.

GHS beneficiaries can directly access personal doctors, outpatient specialists for chronic/serious illness (cancer, thalassemia etc.) care, dentists for preventive dental care, midwives, ambulances and accident and emergency services without a referral and without paying any personal contribution. For accident and emergency services a co-payment applies. Moreover, a female beneficiary who has attained the age of 15 and visits an outpatient specialist in gynaecology/obstetrics, and a beneficiary who is serving his compulsory military service and visits an outpatient specialist having a referral by a military doctor, can access these healthcare services without a referral. However, they need to pay the co-payment amount as indicated in table A1.3 for visiting an outpatient specialist.

A1.4. Financing approach

For the implementation of the GHS, a Healthcare Insurance Fund (GHS Fund) has been established for the purpose of gathering the relevant contributions, and from which all payments to providers of healthcare services are made. The GHS Fund is administered by the HIO.

The HIO sets an individual global budget for each segment of healthcare following consultations with the respective representatives of the healthcare providers. The total global budget corresponds to the

annual expenditure for healthcare services covered by the GHS. In any given financial year, the actual expenditure for any segment of healthcare within the framework of the GHS cannot exceed the predetermined global budget, irrespective of the volume of services provided. This practice aims at containing the cost and ensure the sustainability of the scheme. The annual global budget of each healthcare segment is allocated to the 12 months of the year.

A1.5. Source of funding

The GHS Fund revenues come from contributions, co-payments, personal contributions (contribution I), donations and legacies, income from assets of the HIO, investment income (interest paid on the GHS Fund accumulated surplus) and any other income accrued from the activities of the HIO.

A1.5.1. Contributions

The main GHS source of financing is contributions. The payment of the contributions for the first phase started on 1 March 2019 and was full implemented on 1 March 2020.

The categories of contributors are:

- Employees;
- Employers;
- State;
- Self-employed;
- Pensioners;
- Income-earners;
- Government officials;
- Persons responsible for the payment of remuneration to government officials.

The contribution rates for each category of contributors set by the General Healthcare System (Amending) Law of 2017 are shown in table A1.2.

► **Table A1.2. Contribution rates for each category of contributors during the first phase and full implementation phase (percentages)**

Category	First phase (1 March 2019 – 28 February 2020)	Full implementation (as of 1 March 2020)
Employees (public and private sector)	1.70	2.65
Pensioners	1.70	2.65
Income earners (e.g. rent, interest, dividends)	1.70	2.65
Government officials	1.70	2.65
Self-employed	2.55	4.00
Employers (including the State as an employer)	1.85	2.90
Government/State	1.65	4.70

There is a maximum annual income per physical person of €180,000 on which contributions are payable.

The Treasury oversees the collection of contributions from the salaries of employees which are employed by the Republic of Cyprus, pensions provided by the Government/State (excluding Social Pension) and earnings of government officials. The Social Insurance Services (which covers other branches of social security as pensions, maternity, sickness, etc.) oversees the collection of contributions

from the salaries of employees other than those who are employed by the Republic of Cyprus, insurable earnings of the self-employed and pensions provided by the Social Insurance Fund and Social Pension. Finally, the Tax Department oversees the collection of contributions from earnings over the insurable earnings of the self-employed, pensions from Cyprus other than those paid by the Treasury or the Social Insurance Services, pensions from abroad, earnings of officials other than government officials and other income (e.g. rent, interest, dividends).

In the case where a physical person is not a tax resident of Cyprus, he/she will pay contributions only for the income, earnings and pensions which are derived from the Republic of Cyprus, excluding dividends and interest.

A1.5.2. Co-payments and Personal Contribution I and II

Where applicable, upon receiving a healthcare service, the beneficiary pays directly to the provider of the healthcare service the relevant co-payment and/or Personal Contribution I and II.

Co-payment

The objective of the co-payment is to encourage responsible behaviour by patients and healthcare providers and to prevent the abuse of the healthcare services offered. The healthcare services for which a co-payment is paid by the beneficiary and the amounts of the co-payments are set out in table A1.3. The co-payment is paid directly to the healthcare provider and constitutes part of the provider's fee.

► **Table A1.3. Co-payments applied by healthcare service providers**

Healthcare service	Applied	Co-payment amount (€)
Drugs	Per product	1.00
Medical devices/consumables	Per product	1.00
Vaccines	Per product	0.00
Laboratory tests (up to 10 lab tests per lab order)	Per test/test panel	1.00
Outpatient specialists (except radiology, pathological anatomy, cytology)	Per visit	6.00
Radiology	Per test	10.00
Pathological anatomy, cytology	n/a	0.00
Personal doctors	Per visit	0.00
Allied health professionals (occupational therapists, clinical dieticians, clinical psychologists, speech therapists, physiotherapists)	Per visit	10.00
Nurses and midwives	Per visit	6.00
Accident and emergency departments	Per visit (on triage activity)	10.00
Dentists	n/a	0
Inpatient services	n/a	0
Ambulance services	n/a	0
Palliative care and Institutional rehabilitation services	n/a	0

A maximum annual amount of co-payments is set for each beneficiary in order to protect vulnerable groups (e.g. low-income persons and/or persons with increased needs in medical care) and to safeguard

unhindered access of the population to the necessary healthcare services. The maximum annual amounts for co-payments are shown in table A1.4.

► **Table A1.4. Annual co-payments cap by beneficiary category**

Beneficiary category	Annual co-payment cap
General population	150
Beneficiaries under 21 years old	75
Low-income pensioners	75
Recipients of the Guaranteed Minimum Income	75
Specific groups of beneficiaries are exempted from co-payments according to the relevant GHS legislation	0

Co-payments do not apply for personal doctor visits (additional co-payment applies, of €0 to €15 per visit, only in the case where the beneficiary exceeds the specified annual number of personal doctor visits defined for their age group), ambulances, inpatient care and dentists for preventive dental care.

Additionally, a co-payment of €0 to €25 applies for out-of-hour visits to personal doctors and outpatient specialists. In cases where the additional co-payment applies, no other co-payment or PC I is payable by the beneficiary.

Personal Contribution I and II

Under the GHS, a referral is needed to access certain healthcare services. These are: outpatient specialists, laboratories, pharmacies, nurses, midwives and allied health professionals and hospitals for inpatient services. In case where a beneficiary visits directly an outpatient specialist without a referral from their personal doctor, the Personal Contribution I of €25 per visit will be paid. The two exceptions for which this Personal Contribution I is not applied are:

- a female beneficiary who has attained the age of 15 and visits an outpatient specialist in gynaecology/obstetrics; and
- a beneficiary who is serving his compulsory military service in the National Guard of the Republic and holds a referral by a military doctor referring him to an outpatient specialist.

Moreover, personal doctors, outpatient specialists for chronic/serious illness (cancer, thalassemia, etc.) care, dentists for preventive dental care, midwives, ambulances and accidents and emergencies services can also be directly accessed without a referral and without paying a Personal Contribution I. For accident and emergency services a co-payment applies.

Once a personal contribution is due, then no co-payment is deemed due. Personal Contribution I is paid directly by the beneficiary to the healthcare provider and constitutes part of the healthcare provider's fee. No annual cap applies on personal contribution I.

As a general principle, the GHS covers only prescribed pharmaceuticals and vaccines. The HIO reimburses fully the cheapest pharmaceuticals based on its active ingredient-group or/and its therapeutic-class-group. In this case the beneficiary pays only the co-payment amount of €1 per drug. In cases where beneficiaries choose a more expensive pharmaceutical product than the one reimbursed fully by the GHS, they pay a Personal Contribution II which is equal to the difference between the price of the pharmaceutical product covered by the GHS and the price of the chosen pharmaceutical product. Personal Contribution II is paid in addition to the co-payment or the Personal Contribution I. It is noted that the above does not apply for innovative/high-cost drugs.

A1.6. Reimbursement methods

The HIO reimburses providers through various reimbursement methods; these are:

1. **Price list (fixed fee):** Reimbursement is calculated based on the list price of each item for the specific date. Price list catalogues exist for:
 - a. Drugs
 - b. Medical equipment/Consumables
 - c. Drugs for vaccinations
 - d. Personal doctors out-of-hour service
 - e. Personal doctors firstborn visit
 - f. Specific inpatient care services (Catalogue Z)
 - g. Specific outpatient specialists' activities/items
 - h. Personal doctors for children for the escort of a child by ambulance
2. **Point system:** Reimbursement is calculated based on the number of points of each activity in a group, the total claimed number of points per group and the group budget of each month. Point values are calculated monthly, based on the monthly budget and the total number of points for the specific month. The HIO can define minimum or maximum amounts for point values. Claims reimbursements are based on the calculated point value of the specific group. The point system applies for:
 - a. Laboratory tests
 - b. Outpatient specialists (OS)
 - c. Special group of OS (diagnostic radiology, pathological anatomy, cytology, nuclear doctors)
 - d. Personal doctors Tier 2 & 3 services (excluding services under the price list reimbursement method)
 - e. Accident and emergency (A&E) activities from private hospitals
 - f. Allied health professionals activities
 - g. Inpatient activities
 - h. Dentist activities
 - i. Nurse activities
 - j. Midwife activities
 - k. Pharmacist fee (both for the dispensing of drugs and for out-of-hours services)
3. **Capitation reimbursement:** Reimbursement is not claim-based. It concerns the personal doctors and the services they offer to beneficiaries registered in their list. It is calculated based on the number of days each beneficiary is registered to a personal doctor list according to a daily rate corresponding to the age group of the beneficiary.
4. **Performance reimbursement:** Implemented in 2022 and aiming at improving quality of services. The reimbursement amount for each provider is calculated based on various key performance indicators (KPIs).
5. **Inpatient diagnosis related group (DRG) point system reimbursement:** Inpatient services are reimbursed per case based on a DRG reimbursement method. The DRG cases are separated into normal, specialised and births. The Standard Base Rates (point value) which apply for each hospital for normal and specialised cases, are determined based on the score of each hospital on specific qualitative criteria. The Standard Base Rates for specialised cases are higher than the

Standard Base Rates for normal cases. The Base Rate for all birth cases is fixed, and it is the same for all hospitals. A pre-agreed number of points is defined for each hospital for normal and for specialised cases, up to which no discount factors apply on each hospital's respective Standard Base Rates. In case a hospital exceeds its pre-agreed number of points, discount factors apply in order not to exceed the global budget.

6. Fixed annual amount: A&E Department for public hospitals and ambulances of public hospitals.

Personal doctors

About one quarter of doctors in Cyprus report that they provide general practice services, although this might not be their specialization, while gatekeeping has been designed as the backbone of the GHS. Most of the private doctors working outside hospitals have joined the GHS.

There are two personal doctors (PD) categories, the PD for adults (over 15 years old) and the PD for children (under 18 years old). PDs are reimbursed for the provision of healthcare services, mainly by capitation fee, and based on the number of beneficiaries registered on their PD's catalogue. Since June 2022, in addition to the capitation fee, KPIs reimbursement method has been introduced for PDs. The capitation fee amount that is paid to a PD per beneficiary is based on the age group of each registered beneficiary. The PDs monthly fee is calculated by multiplying the number of days which each beneficiary is registered to personal doctor list during that month, according to a daily rate corresponding to the age group of the beneficiary. Personal doctors for children are paid a fixed fee amount of €250 for the newborn visit.

► **Table A1.5. Age groups and capitation rates (euros)**

Age group	01/01/2022 – 31/05/2022		01/06/2022 – 31/12/2022		01/01/2023 +	
	Annual rates	Daily rates	Annual rates	Daily rates	Annual rates	Daily rates
0–3	210	0.57	186	0.51	186	0.51
4–7	155	0.42	137	0.38	137	0.38
8–14	91	0.24	80	0.22	80	0.22
15–17	91	0.24	80	0.22	80	0.22
18–50	83	0.22	66	0.18	66	0.18
51–70	117	0.32	94	0.26	94	0.26
71+	145	0.39	116	0.32	116	0.32

An adjustment in the per capita remuneration, average reduction of 10 per cent, was applied to all PDs due to the COVID-19 impact on the economy and consequently on the GHS Fund. This adjustment was in place from May 2020 to February 2022.

Outpatient services

Outpatient specialists (OS) are reimbursed on a fee-for-service method, based on the activity list of each specialty and the point system method. Under the point system method, the healthcare services are reimbursed based on the number of points of the specific medical activity and the point value for the specific month.

Separate budgets and point values are applied for most outpatient specialties. Each specialty with a separate budget currently has an additional margin on its basic budgeted amount. That margin stands at 15 per cent in 2025. All specialties together have an additional total budgeted amount, namely the 'equalization fund'. In cases where the total number of points per specialty exceeds the pre-defined limit, the point value is adjusted so the corresponding specialty expenditure to do not exceed the global

budget set for the specific specialty. The HIO has the right to transfer budget amounts between specialties, i.e., from the surplus of one specialty the HIO has the right to cover the additional costs of another specialty provided that the total global budget for all OS specialties is not exceeded.

Fixed fee reimbursement is applied for specific consumables and facility fees for certain specialties.

Laboratory services

Laboratory services are performed outside the context of inpatient care. They are reimbursed by fee-for-service based on the laboratory tests catalogue and the point system method. Since 1 March 2026, the actual number of points is categorised into four categories, and a global budget is set for each category of points. The point value for each category of points is calculated based on the global budget of each category and the actual number of points in the specific category. The reimbursement of each laboratory is calculated based on its number of points in each category and the point value for each category.

Currently, only few specialized laboratory tests are covered. Full coverage of the specialised tests is planned to start once the relevant legislation is finalized by the MoH and approved by the Parliament. The cost of specialized laboratory tests is currently primarily financed by the MoH. Part of the cost is also covered by the State Health Services Organization (SHSO – the organization managing the public hospitals). These costs are expected to be passed to the HIO once the above legislation is approved and full coverage of specialised tests under GHS is implemented.

Pharmacists, pharmaceuticals, consumables, and medical devices

The following categories can be differentiated under this section:

- pharmacist fee reimbursed through the point system method as per the activity catalogue;
- pharmacist fee for out-of-hours services reimbursed through the point system method;
- pharmaceutical drugs/medical devices/consumables, reimbursed through a price list. The reimbursement is based on a fixed fee per drug/medical device/consumable; and
- new/innovative drugs reimbursed based on a fixed fee per drug.

Discounts and clawbacks are applied to pharmaceutical companies based on the actual levels of drugs consumption. In addition, managed entry agreements between HIO and pharmaceutical companies are implemented for the introduction of new/innovative drugs.

New/innovative drugs are introduced into the System on an ongoing basis, either through the named-patient committee or via managed entry agreements signed with pharmaceutical companies. The vast majority of drugs currently examined under the named-patient committee is expected to be gradually transferred to managed entry agreements by 2027.

Inpatient services

For private or public hospitals affiliated with the GHS, inpatient services are reimbursed per case based on a diagnosis-related-group (DRG) reimbursement method. As from 1 September 2023, the inpatient DRG cases are separated into normal, specialised and births. The Standard Base Rates (point value) which apply for each hospital for normal and specialised cases, are determined based on the score of each hospital on specific qualitative criteria. The Standard Base Rates for specialised cases are higher than the Standard Base Rates for normal cases. The Base Rate for all birth cases is fixed and it is the same for all hospitals. A pre-agreed number of points is defined for each hospital for normal and for specialised cases, up to which no discount factors apply on each hospital's respective Standard Base

Rates. In case a hospital exceeds its pre-agreed number of points, discount factors apply in order the specific hospital to do not exceed the global budget.

It is noted that DRG points for normal or specialised cases which arise after a referral from an A&E department, are not subject to discount factors if these A&E visits are up to a maximum percentage of the total A&E visits.

The Z-catalogue items concern high-cost consumables and medical devices, high-cost pharmaceutical products and high-cost procedures under inpatient services, which are reimbursed over and above DRG reimbursement. They all have fixed prices for the services defined in Z-catalogues and they are reimbursed based on a fee-for-service method. Depending on the actual volume of specific Z-catalogue procedures, discount factors apply in order not to exceed the global budget.

Global budgets are defined separately for DRGs, Z-catalogue procedures, Z-catalogue drugs and Z-catalogue consumables.

Finally, as from 1 October 2025, the HIO has assumed direct responsibility for the management of inpatient treatment of GHS beneficiaries abroad.

Accident and emergency services and ambulances

Currently, a different reimbursement method is applied for private and public hospitals for accident and emergency (A&E) services. Private hospitals are reimbursed per case based on the fee-for-service method and the point system method. The SHSO (the organization managing the public hospitals) is reimbursed based on a guaranteed annual amount.

Private hospital A&E departments are reimbursed on a point system method. If the hospital's A&E department exceeds the pre-agreed number of points, its point value is adjusted so that the global budget is not exceeded. Emergency services in private hospitals are reimbursed similarly to inpatient services.

The SHSO is the unique provider for ambulance services under the HIO and is reimbursed for ambulance services based on a guaranteed monthly amount.

Dentist, nurses and midwives and allied health professionals

Dentists are reimbursed on a point system method based on the number of points of the specific medical activity and the point value for the specific month. Nurses, midwives and allied health professionals are reimbursed on the fee-for service-method based on the activity list as per the activity catalogue and the point system method.

Separate budgets and point values are applied for dentists, nurses, midwives and allied health professionals. Furthermore, nurses' budget and point value differentiate between general nurses and nurses for psychiatric nursing. Differentiation of the budget and the point value is also made for the different specialities of allied health professionals, specifically: physiotherapists, occupational therapists, speech therapists, podologists, clinical dieticians and clinical psychologists. Each category of allied health professionals currently has an additional margin on its basic budgeted amount. That margin stands at 10 or 15 per cent in 2025.

► Annex 2. The ILO/HEALTH modelling framework

A2.1. Objective of the ILO/HEALTH modelling framework

Building on decades of policy and analytical work to support countries in the extension of their social protection systems, the ILO has created a modelling framework, along with a set of quantitative tools, to support the long-term planning and sustainability of social health protection schemes and programmes. This framework supports the development of institutional capacities to produce a strong evidence-based process of policy reform. The tools should be used as part of a policy process aimed at ensuring that the human right to access healthcare becomes a reality for all. As the world works to achieve the 2030 Agenda for Sustainable Development, there is an urgent need to ensure that the targets of the Sustainable Development Goals (SDG) will be met and sustained over time. To this end, the ILO strives to support those efforts, especially with a view to achieving and sustaining SDG Target 1.3 on universal social protection and Target 3.8 on universal health coverage.

A2.2. Scope of the ILO/HEALTH modelling framework

The ILO/HEALTH modelling framework targets the establishment of appropriate models that can be used to estimate and project the future financial impact of the introduction of and/or parametric changes to social protection schemes and programmes covering healthcare. These schemes or programmes should aim to provide effective access to healthcare services without hardship. The ILO International standards envisage the provision of medical care – both preventative and curative – by defining a basic set of goods and services that should be provided with a view to maintaining, restoring or improving health and the ability to work and attend to personal needs.

In line with ILO standards and principles, the ILO/HEALTH modelling framework is adapted to the variety of systems that exist to finance these schemes and programmes. It can be adapted to both tax-financed programmes and schemes funded by contributions, in accordance with the recognition by ILO standards that several approaches exist to ensure effective access to healthcare as long as they respect key principles:³

- The modelling framework is adapted to the diversity of arrangements that can exist for the financing, purchasing and provision of healthcare. The recourse to social health insurance, a national health service or a combination of these schemes is possible in line with ILO Medical Care Recommendation, 1944 (No. 69).
- It can be used for both contributory and non-contributory short-term cash benefits to guarantee income security during sickness.

The ILO/HEALTH modelling framework is the result of conceptual, methodological and technical development over several decades of experience of the ILO worldwide. It implies the establishment of actuarial models that combine components of economic, demographic and financial modelling specific to healthcare schemes, and it can be used to support quantitative work in both social health insurance schemes and national healthcare services.

The formulation of quantitative models for healthcare schemes comprises a complex and interrelated set of elements. These include the macroeconomic framework, the labour market, the different population groups covered, the rules of financing and access to healthcare services, the supply and

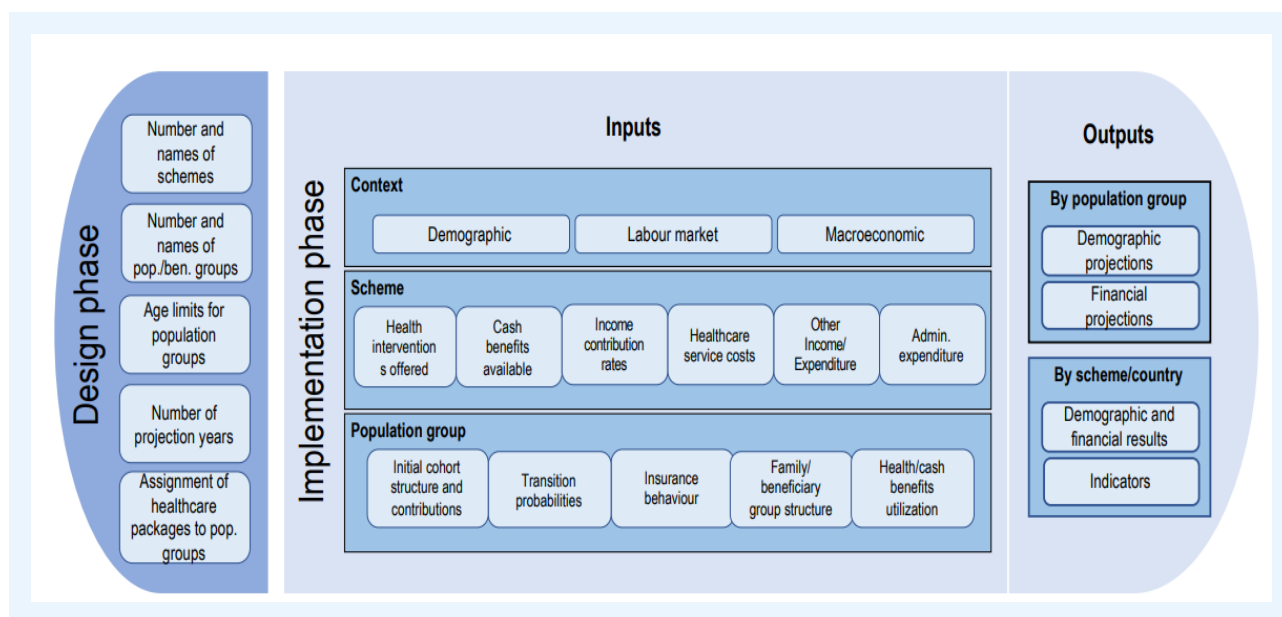
³ ILO. 2020. Towards Universal Health Coverage: Social Health Protection Principles. Social Protection Spotlight Brief. Available at: https://www.ilo.org/secsoc/information-resources/publications-and-tools/Brochures/WCMS_740724/lang--en/index.htm.

demand for healthcare services, rules for the allocation of financial resources to healthcare service providers and their linkage to payment methods, and the institutional arrangements for linking the flow of economic resources to the demand for healthcare services.

A2.3. The building blocks of the modelling framework

The ILO/HEALTH modelling framework is constructed on a basic set of building blocks. Understanding these building blocks is crucial to modelling and obtaining the desired results (see figure A2.1).

► **Figure A2.1. Overview of the modelling framework (building blocks)**



Modelling work is done in **two phases**:

- The first phase is the design phase, where the establishment of parameters is done. First there is the need to discuss and analyse the critical aspects of setting up a particular actuarial model. To this end, defining the schemes that are going to be modelled, the population groups that belong to each scheme and the age limits of each population group within the scheme are necessary. For the formulation of more than one scheme, at least one group of active contributors (in the case of contributory schemes) is required. Every scheme also has a set of beneficiaries' groups: contributors, pensioners (when this option applies) and protected dependent family members. The projection period and the method of calculation of results can be in nominal or real terms. A critical stage in the design phase is the configuration of the healthcare services and their linkage to the relevant population groups.
- The second phase is the **implementation phase**. Once a model is set with the appropriate parameters, the creation of base scenario and sensitivities analysis follow.

A2.3.1. Inputs

The following data help to simulate the demographic and financial dynamics of the population groups, as shown in figure A2.1:

- **context:** the national demographic, labour market and macroeconomic framework in which the scheme functions;
- **the scheme's characteristics:** eligibility conditions, services and available benefits (their costs and calculation formula), contribution rates, income and administrative expenditures; and
- **population group characteristics:** initial contributions, structure and transition probabilities (including those of inactive contributors and all beneficiaries' groups) and key information on the healthcare and cash benefit demand.

The **context** is a set of national-level variables and parameters. These include projections of the national population by gender, economic activity participation rates by gender, and a set of basic parameters for the macroeconomic framework, including GDP growth rate, inflation rate, salary growth rate and interest rate.

Scheme data: On the beneficiary end, the scheme rules determine who has access to the scheme's benefits, how much these benefits cost and how these benefits are calculated. Scheme characteristics are also governed by a set of rules that determine the contributors (if applicable), the period during which they contribute, and the proportion of earnings paid as contributions. Regarding health schemes and institutional rules, one or more schemes can exist and be functioning at the national or sectoral level. Thus, there can be national single-scheme models and multi-scheme models.

Typically, a scheme can consist of different rules and cover specific populations other than those used for other healthcare schemes. At the modelling level, specific healthcare schemes are associated with certain population groups, eligibility criteria for access to healthcare services, differentiated healthcare services, one or more payment methods, and a specific definition of costs or fees (reimbursement fees to healthcare providers, considering co-payments and specific frequencies of use of healthcare services).

For **population groups**, data inputs are the initial composition of the different groups; their different transition probabilities (probabilities of moving between populations groups within the scheme or from other schemes); their dependency situation and their economic situation (their relevant cash flows) from the scheme's perspective (salaries or income, including pensioners' income when applicable); and their interaction with benefit providers in the form of utilization or demand curves.

The ILO/HEALTH modelling framework places emphasis on the following characteristics of population groups: (i) their initial composition and their expected transition over time; (ii) their insurance status (the probability that the group will achieve the minimum contribution period to become insured) and the extension of their insurance status to their family dependent groups; and (iii) their demand for benefits or healthcare services as well as cash benefits when available.

A2.3.2. Outputs

Modelling work under the ILO/HEALTH framework provides for the creation of an extensive set of reports for different uses and needs in terms of analysis and policy design. There are two main groups of outputs: outputs at population group level (demographic and financial projections), and scheme or country-level outputs.

Demographic projections should interact with other inputs to estimate the financial projections at the population group level. These contain average salaries, new benefits, total benefits and estimates of the

main cash flows associated with each demographic group. **Financial projections** at each demographic group level should then be combined with other inputs in order to produce financial reports and demographic and financial indicators at the **scheme and country levels**.

The outputs include demographic and financial flows projected in absolute values, such as directly contributing populations, eligible populations, scheme revenues and expenses, and actuarial technical reserve levels, among others.

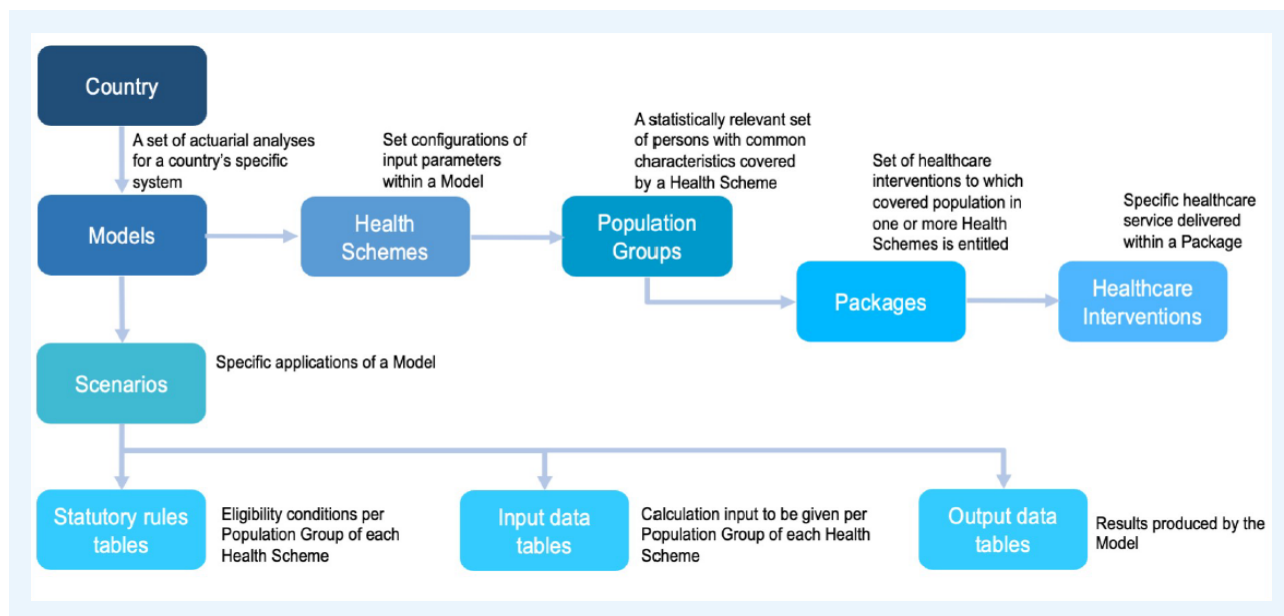
These indicators can be used both to support model calibration and consistency testing and to support results analysis and reporting. The outputs include a set of indicators useful for performing a step-by-step consistency test.

A2.4. Basic concepts used by the ILO/HEALTH modelling framework: An introduction

Modelling work under the ILO/HEALTH modelling framework requires a firm grasp of some basic concepts. Since definitions of these concepts may vary from one country to another, definitions according to the ILO/HEALTH modelling framework are provided below:

- **Model:** A model is a quantitative formulation specific to a country's social health protection system. It includes general definitions (i.e., model description, projection period, and others) and specific definitions for each of the healthcare schemes and programmes that would be used (i.e., scheme rules, populations covered, and others).
- **Scenario:** A scenario is a specific formulation of a model under a certain set of parameters. Each scenario differs from all others in terms of parameters which define statutory rules, population biometrics, specific statutory rules, and others. Under a model, several scenarios can be used so that a variety of conditions are reflected.
- **Base scenario** (status quo scenario): It is good practice to formulate a "base scenario", assuming current conditions with no changes or reforms in parameters and the most plausible developments in demographic and financial terms. A base scenario is essentially a scenario reflecting the status quo, with no changes to legislation (statutory rules), coverage, level of benefits, salaries or other variables. Once the base scenario has been established and calibrated, any *alternative scenarios* can be established which can serve to compare the results of certain simulations, typically policy scenarios, with those reflected in the base scenario.
- **Population group:** Each healthcare scheme may cover one or more population group. Scenarios can be created and linked to the extension of a scheme or programme to one or more uncovered population group. The ability to define more than one population group in a specific model, depends on the limitations of the specific data available, which are needed to be feed into the model for each one of these population groups separately.
- **Healthcare packages:** Healthcare packages are the sets of healthcare interventions/services to which protected/covered persons under one or more healthcare schemes are entitled. Each scheme and its respective population are linked to specific healthcare packages. Several healthcare schemes in the same country may have one or more healthcare packages in common, while others may not. Each healthcare service has an associated payment method. Hence, in the case that a given protected/covered population group is entitled to a range of healthcare interventions/services that have different provider payment methods, one payment method must be created for each service.

► **Figure A2.2. Overview of the relationships between models, scenarios, schemes and population groups**

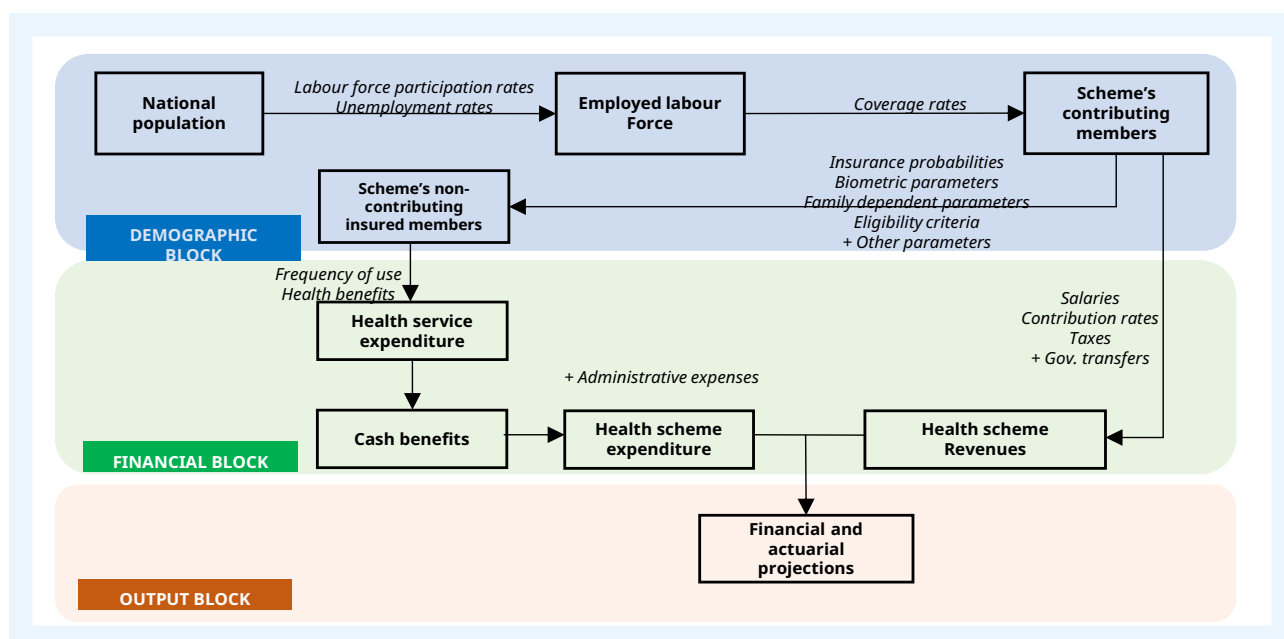


As shown in figure A2.2, the definitions of the different schemes, their associated populations and conditions for entitlement to certain benefits are critical elements when designing a new actuarial model to be applicable for a country. Ideally, this work should be carried out by a multidisciplinary team, with emphasis on the final objectives of the policy analysis. The design features and parameters of each scheme must be known and described accurately to the actuary in order to carry out the analytical work. The same stands for the formulation of scenarios to simulate parametric changes.

A2.5. General flow of the calculation

Figure A2.3 presents an overview of the steps involved in preparing annual projections.

► **Figure A2.3. Overview of the calculation flow (a simplified flow)**



In general terms, the rationale of the projection flow can be described as part of three blocks: demographic block (inputs), financial block (inputs) and projections (outputs). Since the architecture and related financial flows are more complex for contributory schemes, proper actuarial tools are adapted to this complexity across the three blocks.

Block 1: Demographic block

The demographic block is composed of the estimation of the general population and scheme-specific populations:

1. **General population:** To ensure the overall consistency of the population projections, a safe starting point is to have a general population projection distributed by age and gender. This projection can be obtained from official national sources. In the absence of official national projections, the UN World Population Prospect database is a reliable source of these projections. The WPP database can be used to get country-specific decrements and population projections using appropriate demographic assumptions.
2. **Employed labour force:** The hypothetical and projected labour force participation rates and unemployment rates are applied to the population in order to project the employed labour force. Assumptions on the future behaviour/trends of these parameters should consider the main factors affecting their evolution such as: change in female labour force participation rates; urbanization trends; size of the agricultural, services and manufacturing sectors; coverage of the education system; coverage of health insurance systems; and current and expected trends in levels of labour informality.
3. **Scheme's contributing members:** Based on the employed labour force, the coverage rates of each scheme are applied to obtain the scheme's projected active contributors. Usually, this refers to the active members that pays contributions. Assumptions on the future trends of coverage rates are constructed based on expert judgement. International experience is always a useful reference when formulating these assumptions.
4. **Scheme's non-contributing insured members:** The contributions are not the only means to achieve healthcare protection. By forming the protected/covered population based on the whole set of individuals with rights to access healthcare services (beneficiaries), the modelling framework also considers the extension of protection to non-contributing family members.

Block 2: Financial block

The financial block requires that the calculations are performed under the demographic block. Using certain assumptions, this block estimates:

5. **Contribution revenues:** Contribution revenues are derived from the information on salaries and the demographic projection of contributors (i.e., average contributions amount of the demographic groups). Salaries are weighted by age and gender. Salaries are estimated based on the interaction of previous surviving contributing groups and the new entries. Pensions calculation is also crucial in Cyprus, as the pensioners are considered to be contributors to the GHS. Pensions are derived from the information on current pensions, projection of future pensioners (existing and new) and the projected pension amounts. Government transfers and income-earners are also incorporated into the healthcare scheme contribution revenue.
6. **Healthcare scheme expenditure:** Expenditures are derived from the information on the population with the right to healthcare services and depends on the payment method of these services: the frequency and the costs of their use, the per capita cost of their financing, or the budget allocated to their payment.

- 7. Cash benefits:** These are estimated in the same way as health benefits. These estimates use information on the frequency of use and their calculation formulas established in legislation.

Block 3: Projections

By combining the steps above, this block enables users to:

- 8. Project administrative expenditures:** They are projected based on the information of current and historical expenditure combined with the expected trends of factors which reflect wages and price inflation rates.
- 9. Calculate actuarial/financial results and indicators.** The results that are generated display a wide range of output variables and indicators, including demographic, financial and actuarial context. These include projections of the covered populations (directly insured and dependent family members) by population group, age and gender; healthcare expenditures by age and gender; revenues from members' contributions, by age and gender; financial flows of income and expenditure; financial results of operations; and actuarial, coverage, revenue and expenditure indicators.

A2.5.1. Output reports for financial and actuarial projections

This category of outputs comprises a variety of reports that provide details on the intermediate and final calculations performed. In general, they contain the following:

- Demographic projections: by age, gender, population group and healthcare scheme, including details for active and inactive contributors and beneficiary populations.
- Detailed financial projections: These include projected flows of insurable earnings, income and expenditures, and projected healthcare service expenditures (by type of expenditure). Where applicable, these projections are disaggregated by age, gender and population group.
- Financial and demographic indicators: Indicators reports are useful in order to review the resulting values and to assess if the model formulation is performing well according to the expected logical results for the scheme under evaluation. They also allow for a more detailed overview of the future development of the different coverage schemes.

► Annex 3. Scheme-specific data and assumptions

A3.1. Introduction

In addition to the demographic and economic assumptions presented in Chapter 4 of this report, the projection of the future GSIS income and expenditure development of the GHS requires a database specific to both the GSIS and GHS (characteristics of insured persons and pensions in payment and registered beneficiaries) and some particular actuarial assumptions. For the present valuation, for income projection purposes, projections have been performed separately for insured persons with basic insurance only and those with basic and supplementary insurance. In addition, basic data and assumptions have been divided according to the insured persons' age and gender. For the projection of future expenditure development, GHS-registered beneficiaries and scheme-specific data were adopted and projected based on particular actuarial assumptions.

A3.2. Data and assumptions on the insured and covered population

A3.2.1. Number of insured persons

Data on the insured population were obtained from the statistics and information systems department of the Social Insurance Services. The database presents a population of 580,023 active insured persons having contributed in 2023. Out of these persons, 394,433 had annual earnings over €10,482 (in 2023) and have thus been credited with both basic and supplementary insurance points. The distribution of these populations by age and gender is presented in table A3.1.

In addition to the persons who have contributed in 2023, the GSIS covers another 375,497 persons who have contributed to the GSIS in the past, but not in 2023; these were taken into account. This population was projected for the needs of future pensions estimations. Their characteristics are presented in table A3.2. These persons still have the status of insured persons and may re-enter into the GSIS active insured population at some point in the future.

► **Table A3.1. Active insured persons, 2023**

Age group	Basic only			Basic and supplementary		
	Male	Female	Total	Male	Female	Total
15–19	6 438	6 014	12 452	448	386	834
20–24	17 197	13 832	31 029	9 407	6 395	15 802
25–29	17 030	13 157	30 187	24 639	19 578	44 217
30–34	12 663	11 856	24 519	32 521	25 134	57 655
35–39	9 788	11 200	20 988	33 552	26 604	60 156
40–44	7 592	10 344	17 936	31 327	26 201	57 528
45–49	5 309	9 116	14 425	25 148	22 746	47 894
50–54	4 381	8 024	12 405	22 058	20 020	42 078
55–59	4 021	5 880	9 901	20 506	16 349	36 855
60–64	4 002	4 172	8 174	16 982	11 997	28 979
65–68	2 023	1 551	3 574	1 508	927	2 435
Total	90 444	95 146	185 590	218 096	176 337	394 433

► **Table A3.2. Inactive insured persons, 2023**

Age group	Basic only ¹			Basic and supplementary ²		
	Male	Female	Total	Male	Female	Total
16–19	88	46	134	5	0	5
20–24	2 268	1 949	4 217	484	263	747
25–29	6 923	5 506	12 429	3 186	1 851	5 037
30–34	10 043	10 005	20 048	6 544	4 454	10 998
35–39	13 922	16 171	30 093	11 628	7 811	19 439
40–44	13 740	18 811	32 551	14 591	8 695	23 286
45–49	10 627	19 768	30 395	14 208	8 378	22 586
50–54	10 333	23 082	33 415	14 072	9 441	23 513
55–59	6 791	16 797	23 588	12 459	9 894	22 353
60–64	4 847	12 904	17 751	11 027	10 603	21 630
65+	4 091	8 132	12 223	4 801	4 258	9 059
Total	83 673	133 171	216 844	93 005	65 648	158 653

Notes: ¹ Persons with at least one insurance point in the basic part of the GSIS are included. ² Persons with at least one insurance point in the supplementary part of the GSIS are included.

A3.2.2. Insurable earnings

Credits under the GSIS are computed in terms of points. For the year 2023, one insurance point is equivalent to annual earnings of €10,482. The first insurance point is credited to the basic part of the GSIS, and annual earnings in excess of €10,482 and up to €60,060 are converted into insurance points in the supplementary part. Table A3.3 presents average annual insurable earnings of active contributors by insurance level (basic only/basic and supplementary) and for specific age groups.

► **Table A3.3. Average annual insurable earnings of active contributors, 2023 ⁴**

Age group	Basic only		Basic and supplementary	
	Male	Female	Male	Female
16–19	3 817	4 236	14 211	12 868
20–24	5 033	5 029	16 796	15 340
25–29	5 371	5 295	21 158	19 638
30–34	5 472	5 361	25 303	22 718
35–39	5 671	5 539	27 764	24 404
40–44	5 789	5 798	29 390	27 162
45–49	5 872	5 805	31 536	28 697
50–54	5 977	5 865	31 763	27 750
55–59	6 092	5 887	30 159	26 497
60–64	5 894	5 956	29 560	26 635
65–68	4 348	4 573	22 808	22 453
Total	5 467	5 513	27 656	25 026

⁴ New entries, re-entries and terminations are not included.

In order to reflect the dispersion of earnings and, consequently, the distribution of earnings for active contributors by insurance level (basic only/basic and supplementary), a coefficient of variation has been applied to average earnings by age group and for each year of projection. In addition, the average earnings of the insured population have been separated into three sub-groups: the lowest 30 per cent, a medium range of 40 per cent and the highest 30 per cent.

A3.2.3. Number of registered beneficiaries

Data on the registered beneficiaries (table A3.4) were obtained from the information systems department of the HIO. The database presents a population of 960,500 registered beneficiaries in December 2023 and 991,562 in December 2024. This increase is mainly due to fertility and net migration.

► **Table A3.4. Registered beneficiaries, 2023–24**

Age group	December 2023			December 2024		
	Male	Female	Total	Male	Female	Total
0–3	19 913	18 676	38 589	19 618	18 475	38 093
4–7	20 237	19 158	39 395	20 683	19 565	40 248
8–14	35 081	32 968	68 049	36 106	33 802	69 908
15–17	14 290	13 405	27 695	14 599	13 900	28 499
18–25	40 696	39 916	80 612	42 427	41 084	83 511
26–30	34 592	34 622	69 214	35 555	35 274	70 829
31–35	38 749	38 765	77 514	40 520	40 090	80 610
36–40	38 856	40 364	79 220	40 888	41 602	82 490
41–45	35 758	39 035	74 793	38 212	40 880	79 092
46–50	29 415	34 592	64 007	30 914	36 254	67 168
51–55	27 842	32 748	60 590	28 237	33 490	61 727
56–60	28 063	29 995	58 058	28 442	30 679	59 121
61–65	28 215	29 383	57 598	28 561	29 876	58 437
66–70	24 414	25 403	49 817	25 484	26 633	52 117
71–75	20 778	22 319	43 097	20 768	22 480	43 248
76–80	16 720	18 927	35 647	17 823	19 867	37 690
81–85	9 233	11 689	20 922	9 618	12 239	21 857
86–90	4 548	6 768	11 316	4 978	7 327	12 305
91–95	1 317	2 364	3 681	1 402	2 473	3 875
96–100	216	431	647	211	468	679
101+	8	31	39	17	41	58

A3.3. Demographic assumptions related to contributors and beneficiaries

A3.3.1. Mortality of insured persons and registered beneficiaries

Mortality rates for the insured population and the registered beneficiaries have been assumed equal to the mortality rates of the general population. Sample mortality rates are presented in table A3.5. This mortality pattern is also used to project survivors' benefits payable on the death of insured persons or pensioners. Mortality rates are assumed to decline continuously during the projection period.

For invalidity pensioners, in the absence of statistics on the experience under the GSIS mortality rates have been set so as to reflect the level of the Swiss EVK Table. Mortality rates for males and females were fixed, at age 20, at 25 times the mortality rate applicable to active insured persons and this ratio was linearly reduced to one at age 60.

► **Table A3.5. Sample mortality rates applied to the insured population**

Age	Male			Female		
	2023	2028	2033	2023	2028	2033
0	0.00478	0.00422	0.00346	0.00266	0.00215	0.00180
5	0.00012	0.00010	0.00008	0.00010	0.00010	0.00008
10	0.00011	0.00012	0.00010	0.00010	0.00010	0.00008
15	0.00019	0.00020	0.00018	0.00012	0.00012	0.00011
20	0.00033	0.00030	0.00028	0.00013	0.00013	0.00011
25	0.00040	0.00035	0.00033	0.00013	0.00013	0.00012
30	0.00045	0.00042	0.00041	0.00019	0.00017	0.00016
35	0.00061	0.00058	0.00056	0.00030	0.00028	0.00027
40	0.00086	0.00079	0.00075	0.00047	0.00044	0.00041
45	0.00134	0.00118	0.00112	0.00073	0.00061	0.00059
50	0.00214	0.00187	0.00174	0.00116	0.00097	0.00092
55	0.00346	0.00302	0.00277	0.00189	0.00167	0.00156
60	0.00606	0.00534	0.00485	0.00303	0.00271	0.00248
65	0.00966	0.00864	0.00786	0.00459	0.00409	0.00374
70	0.01633	0.01479	0.01345	0.00777	0.00684	0.00622
75	0.02727	0.02487	0.02266	0.01476	0.01299	0.01175
80	0.04972	0.04564	0.04182	0.03200	0.02850	0.02576
85	0.09497	0.08745	0.08127	0.07456	0.06733	0.06140
90	0.17702	0.16724	0.15759	0.15797	0.14460	0.13369
95	0.26431	0.26116	0.25095	0.25749	0.24459	0.23106
100	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

A3.3.2. Invalidity incidence

Rates of entry into invalidity have been calculated from the past experience of the GSIS. Recent data for the years 2020–2023 were obtained. Invalidity incidence rates are kept constant for the whole projection period. The rates are presented in table A3.6.

► **Table A3.6. Rates of entry into invalidity**

Age	Male	Female
22	0.00008	0.00009
27	0.00017	0.00012
32	0.00020	0.00013
37	0.00039	0.00023
42	0.00043	0.00046
47	0.00067	0.00080
52	0.00127	0.00169
57	0.00297	0.00214
62	0.00491	0.00281

A3.3.3. Retirement

The actuarially assumed retirement rates used in the pension model are consistent with the economic framework, as described in Chapter 4. In particular, projected retirement rates evolve in line with labour force exit ages, which are expected to increase over the projection period due to the recent (2012) GSIS reform. Those labour force exit ages drive the anticipated increase in labour force participation rates. Consistency checks are performed to produce an appropriate retirement pattern, which is consistent with the one observed recently under the GSIS.

In particular, retirement rates are in principle applied from age 63 to 65 in the initial years as per recent retirement experience under the GSIS. These retirement rates gradually shift to higher ages, in line with the Social Insurance Law which provides for a periodic increase of the normal retirement age in the future.

A3.3.4. Family structure

Information on the family structure of insured persons is necessary for the projection of survivors' benefits. In the case of the GSIS, these data are also used to project the dependants' supplement paid in the basic part of the GSIS pension. Assumptions have to be established on the probability of being married at death, the age difference between spouses, the average number of children possibly eligible to an orphan's benefit and the average age of orphans.

Data on the percentage of married persons were obtained from tables of the 2021 Population Census. The age differential between spouses was calculated from data of the Demographic Reports of the Cyprus Statistical Services. The average number of children has been assumed equal to 0.1, considering the stringent eligibility conditions for this benefit and the observed number of orphans' benefits in payment. The average age of orphans has been set with regard to age of the mother at first birth and with some margin for conservatism at older ages. These assumptions are presented in tables A3.7 and A3.8.

► **Table A3.7. Assumptions on the family structure, for male insured persons**

Age	Probability of being married at death	Average age of the spouse	Average age of orphans
17	0.00	17	1
22	0.04	20	1
27	0.17	24	2
32	0.43	29	4
37	0.63	34	7
42	0.72	39	10
47	0.74	44	13
52	0.77	49	16
57	0.80	54	17
62	0.85	59	18
67	0.87	64	19
72	0.86	69	20
77	0.84	74	20
82	0.73	80	20
87	0.73	85	20

► **Table A3.8. Assumptions on the family structure, for female insured persons**

Age	Probability of being married at death	Average age of the spouse	Average age of orphans
17	0.01	17	1
22	0.08	24	1
27	0.28	30	3
32	0.56	35	5
37	0.68	40	8
42	0.71	45	11
47	0.71	50	14
52	0.72	55	16
57	0.75	60	17
62	0.74	65	18
67	0.72	70	19
72	0.66	75	20
77	0.56	80	20
82	0.30	84	20
87	0.30	89	20

A3.4. Pensions in payment

Statutory, invalidity, widows' and orphans' pensions in payment are shown in tables A3.9 to A3.12.

► **Table A3.9. Statutory pensions** (amounts in euros where applicable)

Age group	Basic only				Basic and supplementary			
	Male		Female		Male		Female	
	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension
60–64	9	1 203	24	3 200	5 972	13 356	3 639	9 981
65–69	280	1 464	530	2 095	21 996	12 773	16 114	9 747
70–74	891	2 000	1 020	2 231	17 598	12 962	12 518	9 315
75–79	1 200	3 249	1 711	3 944	15 149	13 269	10 510	8 833
80–84	1 054	3 872	1 569	4 811	8 194	11 958	6 018	7 696
85–89	785	4 378	1 383	5 037	4 599	10 888	2 771	7 462
90–94	290	4 791	738	5 113	1 420	9 431	580	7 448
95+	75	5 177	137	5 006	286	8 448	93	6 753
Total	4 584	3 359	7 112	4 103	75 214	12 680	52 243	9 088

► **Table A3.10. Invalidity pensions** (amounts in euros where applicable)

Age group	Basic only				Basic and supplementary			
	Male		Female		Male		Female	
	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension
20–24	–	–	–	–	–	–	–	–
25–29	1	3 859	–	–	8	6 069	3	6 130
30–34	4	5 732	–	–	32	7 561	7	6 785
35–39	3	4 987	3	3 218	74	7 833	39	6 994
40–44	3	3 036	3	3 318	163	8 452	87	6 995
45–49	6	5 019	3	4 702	221	8 663	172	7 513
50–54	7	4 531	8	3 631	394	8 794	257	7 003
55–59	9	4 976	11	4 003	708	9 139	429	6 735
60–63	9	3 431	7	3 303	673	9 177	383	6 657
Total	42	4 484	35	3 712	2 273	8 919	1 377	6 883

► **Table A3.11. Widows'/widowers' pensions** (amounts in euros where applicable)

Age group	Basic only				Basic and supplementary			
	Male		Female		Male		Female	
	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension
25–29	–	–	5	2 018	–	–	6	9 093
30–34	4	2 522	6	3 632	4	7 536	31	8 397
35–39	7	2 774	6	4 296	8	9 751	101	9 869
40–44	5	2 421	5	2 990	32	10 569	215	10 383
45–49	5	3 390	6	3 678	37	10 010	416	10 117
50–54	4	4 313	20	3 473	76	8 994	764	9 533
55–59	6	4 691	29	3 878	114	7 818	1 133	9 075
60–64	21	4 191	71	3 552	198	7 696	1 941	9 159
65–69	21	3 872	142	3 703	253	7 194	2 922	9 001
70–74	30	3 853	424	4 241	272	7 214	3 852	8 974
75–79	58	4 533	854	4 372	383	7 203	5 511	8 781
80–84	78	4 996	1 027	4 617	330	6 666	5 185	8 106
85–89	98	5 168	1 046	4 691	232	6 710	4 467	7 645
90–94	35	5 067	572	4 942	100	6 612	1 951	7 242
95+	10	5 145	271	5 173	17	5 783	445	6 957
Total	382	4 651	4 484	4 564	2 056	7 282	28 940	8 492

► **Table A3.12. Orphans' pensions** (amounts in euros where applicable)

Age group	Basic only				Basic and supplementary			
	Male		Female		Male		Female	
	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension	Number	Average annual pension
0–4	6	2 018	2	2 018	–	–	–	–
5–9	18	1 953	30	2 021	–	–	1	5 406
10–14	72	2 018	91	1 975	2	8 547	3	5 757
15–19	104	1 986	113	1 990	8	5 808	9	6 290
20–24	74	1 973	61	1 998	7	6 903	9	6 546
25–29	–	–	–	–	–	–	–	–
30–34	–	–	–	–	–	–	–	–
35–39	–	–	–	–	–	–	–	–
40–44	–	–	–	–	–	–	–	–
45–49	–	–	–	–	–	–	–	–
50–54	–	–	–	–	–	–	–	–
55–59	–	–	–	–	–	–	–	–
60–64	–	–	–	–	–	–	–	–
65–69	–	–	–	–	–	–	–	–
70+	–	–	–	–	–	–	–	–
Total	274	1 989	297	1 990	17	6 581	22	6 282

A3.5. Other assumptions

A3.5.1. Credited pension benefits

Taking into account the GSIS recent experience and trends over the period 2019–2023, as well as the development of the fertility rate, female labour force participation rates, education levels and other factors, including legal requirements, assumptions were made with regard to the eligible credits to be awarded to future pensioners in respect of the following periods:

- compulsory service in the national guard for male insured persons;
- childhood (maternity/paternity and parental leave) – granted to both male and female pensioners;
- study;
- unemployment; and
- incapacity for work.

A3.5.2. Indexing of GHS parameters and pensions in payment

It has been assumed that the basic insurable earnings and the minimum pension are indexed annually in line with the wage growth assumption. In addition, pensions in payment are assumed to be indexed in the future in line with the wage index in the basic insurance and with the consumer price index in the supplementary insurance.

A3.5.3. GHS scheme-specific parameters

Laboratory and inpatient costs are directly linked to the agreed volumes specified for each year. The HIO reimburses laboratories and hospitals with an agreed rate for the agreed volumes and for services/activities performed over agreed volumes with a reduced rate. For the projection of laboratory and inpatient costs it has been assumed that the 2023-2025 agreed volumes for the affiliated laboratories and hospitals will increase in line with the development of the population of beneficiaries. This assumption was made in order to match the future agreed volumes for laboratories and hospitals with the future needs for laboratory tests and inpatient treatment of the continually growing population of beneficiaries. The above scheme specific assumptions are presented in table A3.13.

► **Table A3.13. GHS scheme specific assumptions**

Assumption	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Laboratories, agreed volumes	10 000	10 000	10 133	10 262	10 387	10 508	10 624	10 738	10 849	10 958
Number of affiliated laboratories	158	162	164	166	168	170	172	174	175	177
DRGs, agreed volumes	110 823	113 692	116 130	117 607	119 035	120 418	121 757	123 060	124 334	125 580

► Annex 4. Claims experience analysis and assumptions

A4.1. Introduction

In addition to the experience and assumptions detailed in Chapter 5, the projection of future GHS benefits expenditure necessitates a comprehensive analysis of scheme-specific experience and the application of granular actuarial assumptions. This Annex presents the results of the experience analysis performed for the primary/main healthcare categories – namely inpatient care, outpatient services, laboratory diagnostics, and pharmaceuticals – which together constitute the core drivers of GHS expenditure.

The analysis is based on historical claims data, which have been segmented to ensure that the resulting actuarial assumptions are appropriately aligned with the specific utilisation patterns and cost drivers of each service category. For these purposes, past experience has been categorised by beneficiary characteristics, including age and gender, to capture the underlying risk profile of the insured population. Furthermore, the assumptions underpinning the projection of future expenditure have been developed by evaluating observed trends in utilisation and unit costs, whilst also incorporating prospective adjustments to reflect policy changes, evolving clinical practices, and the introduction of new technologies and interventions within each healthcare domain.

A4.2. Claims experience and projection assumptions

As detailed in Section 3.2, the projection of GHS benefits expenditure – representing the aggregate claims cost for each healthcare service – is derived from the projected number of registered beneficiaries, the expected utilisation rates per service and the projected average cost per claim, adjusted for service-specific medical inflation. The utilisation projections are informed by historical claims data and observed trends in service consumption. Concurrently, projections for average claim costs are modelled based on the average points per claim and the point value, which is adjusted over the projection period to account for anticipated medical inflation.

To enhance the robustness of these projections, particularly for healthcare services where utilisation rates or average claim costs have yet to reach a stable state, additional claims data up to December 2024 were provided by the HIO. This extended dataset was instrumental in refining the identification of trends in utilisation and claim costs for both inpatient and outpatient services, thereby ensuring that the underlying assumptions more accurately reflect the most recent experience of the scheme.

A4.2.1. Analysis of inpatient past experience

Tables A4.1 and A4.2 show the observed trends in utilization rates and average cost per invoice for inpatient service categories, by gender, over the years 2022–2024.

► **Table A4.1. Inpatient utilization rates, by gender, 2022–2024 (percentages)**

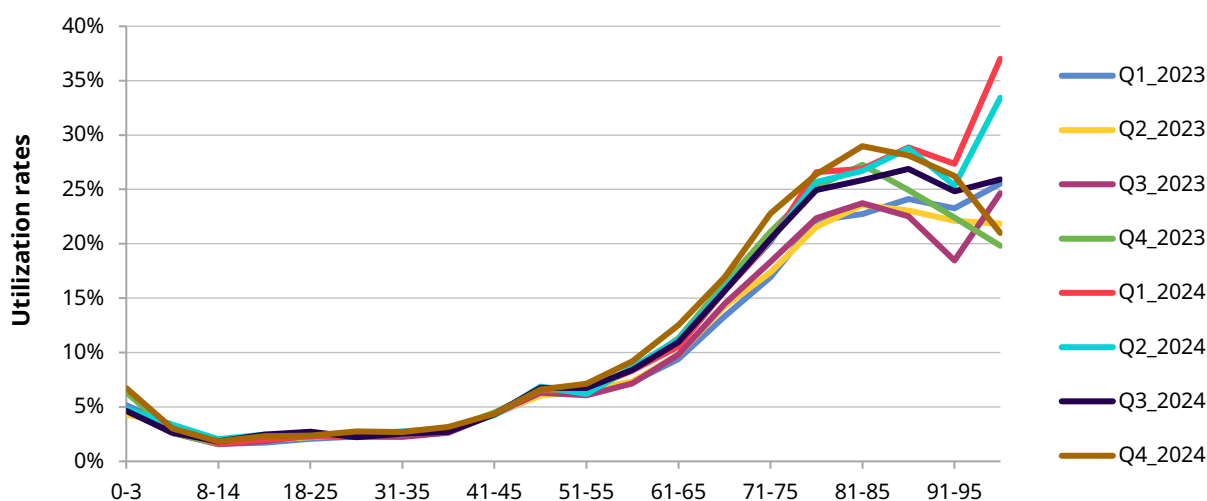
Inpatient category	Gender	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
DRGs	Male	2.8	2.9	2.9	3.2	3.2	3.3	3.2	3.7	3.7	3.8	3.7	4.0
	Female	2.9	3.2	3.1	3.3	3.4	3.5	3.4	3.8	3.9	3.9	3.7	4.2
Z-Drugs	Male	2.6	2.7	2.8	2.9	3.1	2.3	2.8	3.4	3.6	3.7	3.4	3.8
	Female	2.8	3.0	2.2	3.1	3.0	3.3	3.1	3.5	3.7	3.6	3.5	3.9
Z-Consumables	Male	2.8	3.0	3.0	3.2	3.3	3.3	3.3	3.7	3.7	3.8	3.7	4.0
	Female	2.9	3.2	3.1	3.4	3.5	3.5	3.5	3.9	3.9	3.9	3.8	4.2
Z-Procedures & fixed fee	Male	2.8	3.0	2.9	3.2	3.3	3.3	3.3	3.6	3.7	3.8	3.7	3.8
	Female	2.9	3.2	3.1	3.3	3.5	3.5	3.5	3.9	3.9	3.9	3.7	4.2

► **Table A4.2. Inpatient average cost per invoice, by gender, 2022–2024 (euros)**

Inpatient category	Gender	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
DRGs	Male	3 698	3 085	3 223	3 250	3 312	4 405	4 538	3 775	4 149	3 890	4 331	5 643
	Female	2 745	4 185	2 937	2 778	2 765	3 275	3 611	2 997	3 284	4 225	3 595	3 431
Z-Drugs	Male	619	635	509	435	451	575	513	543	503	373	389	563
	Female	541	831	545	402	472	423	448	507	438	416	325	344
Z-Consumables	Male	946	800	832	687	835	1 341	844	863	983	935	989	1 383
	Female	626	897	680	703	836	865	744	795	738	857	826	809
Z-Procedures & fixed fee	Male	536	531	503	519	510	561	503	644	576	607	562	625
	Female	499	512	513	525	478	526	564	597	581	571	529	544

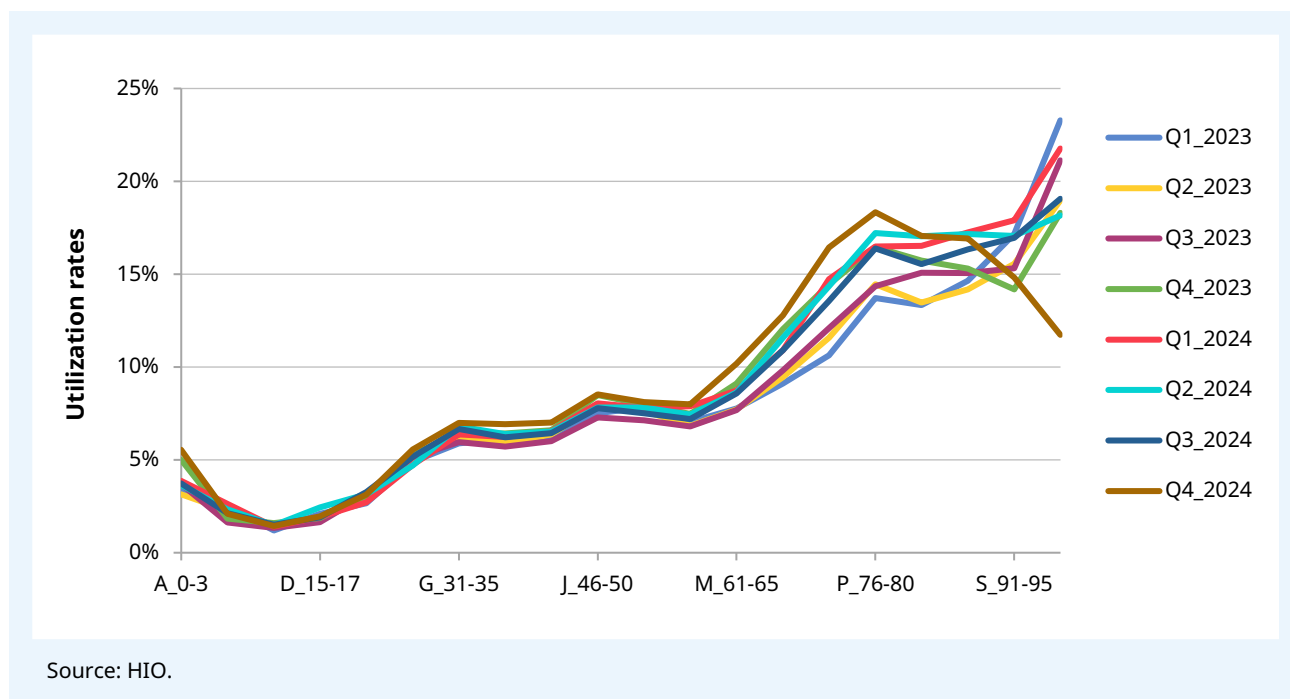
Figures A4.1 and A4.2 show the trend in inpatient utilization rates by age group and by quarter over the years 2023 and 2024 for males and females respectively.

► **Figure A4.1. Evolution of inpatient utilization rates, by age group, males, 2023–24**



Source: HIO.

► **Figure A4.2. Evolution of inpatient utilization rates, by age group, females, 2023–24**



It follows from table A4.1 and figures A4.2 and A4.3 above that the inpatient utilization rates remained relatively stable over the period from quarter 4 of 2023 to quarter 3 of 2024, while over the period from quarter 3 to quarter 4 of 2024 the overall utilization rates experienced an increase for both genders and for the majority of the age groups. Moreover, as illustrated by table A4.2 above, the Z-items cost per invoice and the DRG cost per invoice are not yet stabilized, mainly due to the varying underlying mix of inpatient services/DRGs provided each quarter.

A4.2.2. Analysis of outpatient past experience

Tables A4.3 and A4.4 show the observed trends in utilization rates and average cost per invoice for outpatient service categories, by gender, over the years from 2022 to 2024.

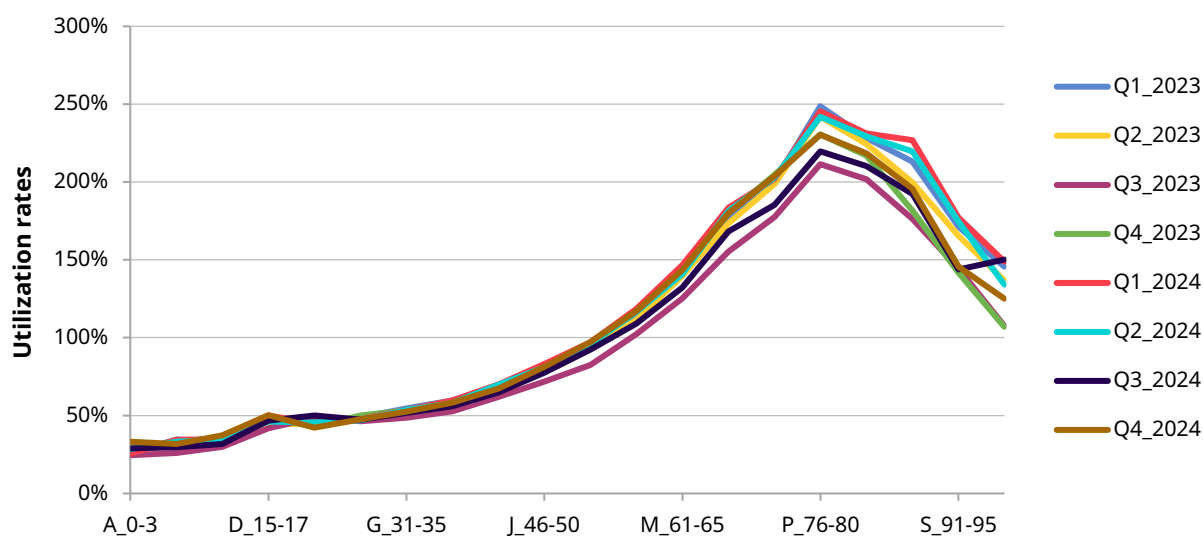
► **Table A4.3. Outpatient utilization rates, by category and by gender, 2022–2024**
(percentages)

Outpatient category	Gender	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Allied health professionals	Male	13.5	13.2	11.5	15.5	17.1	16.7	13.1	17.6	19.5	19.3	16.1	19.6
	Female	16.0	16.7	14.1	19.1	20.9	21.2	16.1	20.7	22.7	23.1	19.3	23.6
Dentists	Male	2.5	3.6	4.0	3.9	3.2	3.7	4.0	4.2	3.5	3.7	4.1	4.3
	Female	2.9	4.1	4.6	4.5	3.6	4.2	4.6	4.8	3.9	4.2	4.7	4.8
Nurses and midwives	Male	0.4	0.6	0.6	0.7	0.8	0.8	0.7	0.9	1.0	0.9	0.8	0.9
	Female	0.6	0.8	0.8	1.1	1.2	1.3	1.3	1.4	1.6	1.4	1.4	1.6
Personal and specialist doctors	Male	39.4	40.3	37.8	40.9	43.3	42.3	38.5	42.9	44.0	43.5	41.1	43.1
	Female	58.5	60.0	57.5	62.0	64.9	62.7	57.5	64.3	65.4	64.7	61.7	64.5

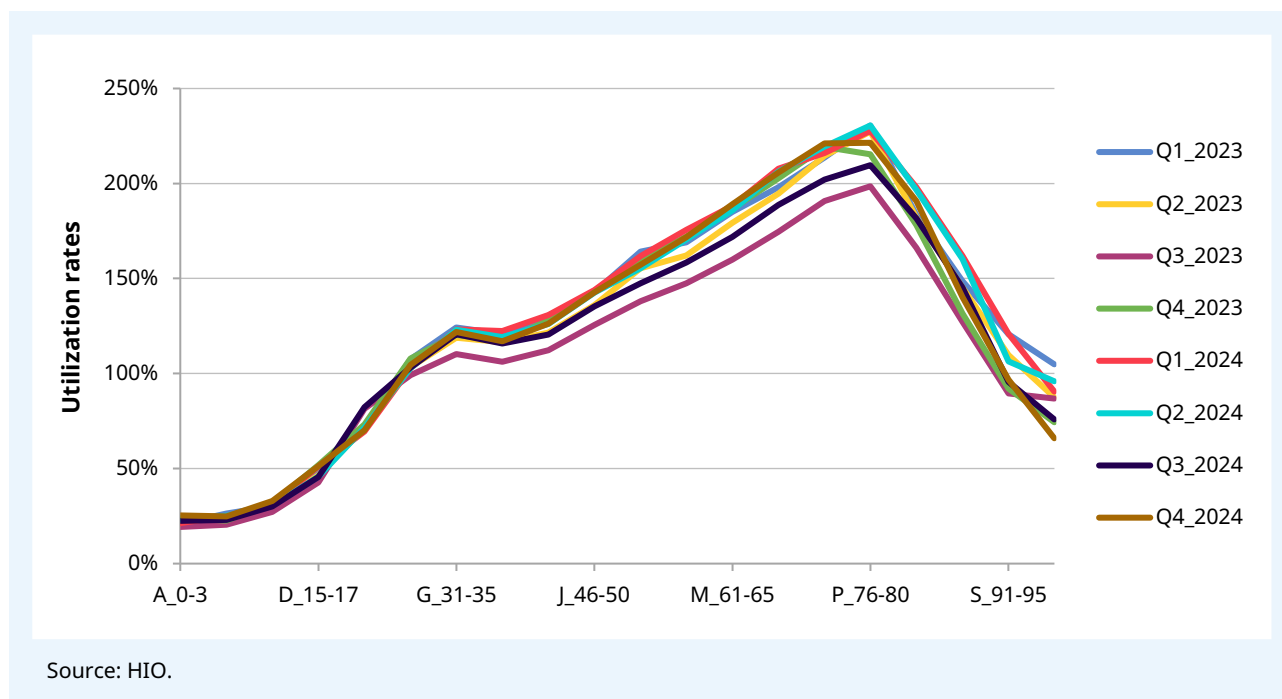
► **Table A4.4. Outpatient average cost per invoice, by category and by gender, 2022–2024 (euros)**

Outpatient category	Gender	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Allied health professionals	Male	32	31	31	32	32	30	31	32	31	30	30	29
	Female	33	32	32	33	32	30	32	33	31	30	30	30
Dentists	Male	39	39	39	39	39	39	39	39	39	39	39	39
	Female	39	39	39	39	39	39	39	39	39	39	39	39
Nurses and midwives	Male	29	30	30	29	30	30	30	30	30	29	29	28
	Female	29	29	29	29	30	30	30	30	30	30	29	29
Personal and specialist doctors	Male	68	67	70	66	63	61	62	58	59	59	61	61
	Female	59	58	59	56	54	52	53	50	51	52	53	53

Figures A4.3 and A4.4 show the trend in outpatient utilization rates by age group and by quarter over the years 2023 and 2024 for males and females respectively.

► **Figure A4.3. Evolution of outpatient utilization rates, by age group, males, 2023–24**

Source: HIO.

► **Figure A4.4. Evolution of outpatient utilization rates, by age group, females, 2023–24**

It follows from table A4.3 and figures A4.3 and A4.4 above that the allied health professionals utilization rates experienced an increase for both genders over the period from 2022 to 2023 and from 2023 to 2024, while for the rest of the outpatient services utilization rates remained relatively stable for both genders and for all age groups over the period from quarter 4 of 2023 to quarter 4 of 2024. Moreover, as illustrated by table A4.4 above, the average cost per invoice also remained relatively stable over the period from quarter 1 of 2023 to quarter 4 of 2024.

A4.2.3. Analysis of laboratories' past experience

Tables A4.5 and A4.6 show the observed trends in utilization rates and average cost per invoice for various laboratory test categories over the years from 2022 to 2024.

► **Table A4.5. Laboratory utilization rates, by category, 2022–2024 (percentages)**

Laboratory test categories	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Biochemistry	24	26	25	27	28	26	24	26	27	27	26	27
Haematology	21	22	21	23	24	21	20	21	22	22	21	22
Immunology	22	24	22	24	26	23	22	23	24	25	24	24
Microbiology	10	11	11	11	11	11	10	11	11	11	11	11

► **Table A4.6. Laboratories, average cost per invoice, by category, 2022–2024 (euros)**

Laboratory test categories	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Biochemistry	45	45	44	44	43	38	36	37	37	24	25	24
Haematology	9	9	9	9	9	9	9	9	9	6	6	6
Immunology	36	36	35	35	35	33	33	34	34	22	23	22
Microbiology	9	9	10	9	10	9	11	12	12	8	9	8

It follows from Tables A4.5 and A4.6 that, over the period from Q2 2022 to Q4 2024, overall utilisation rates remained broadly stable across all laboratory test categories, while the average cost per invoice exhibited a declining trend from Q2 2023 onwards. For Biochemistry and Immunology, the average cost per invoice declined over the period from Q1 2023 to Q2 2024, before stabilising thereafter. By contrast, for Haematology and Microbiology, the average cost per invoice remained relatively stable up to Q2 2024, declined in that quarter, and remained stable thereafter.

A4.2.4. Analysis of past experience for pharmacies and pharmaceuticals for outpatient care

Tables A4.7 and A4.8 show the observed trends in utilization rates and average cost per invoice for pharmacies and pharmaceuticals for outpatient care over the years from 2022 to 2024.

► **Table A4.7. Outpatient care pharmacy utilization rates, 2022–2024 (percentages)**

	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Overall rate	193	194	197	215	224	209	202	216	220	213	210	221

► **Table A4.8. Outpatient care pharmaceuticals, weighted average cost per invoice, 2022–24 (euros)**

	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Overall rate	31	32	34	31	31	32	32	32	31	33	34	33

It follows from tables A4.7 and A4.8 above that over the periods from quarter 3 of 2023 to quarter 1 of 2024 and from quarter 3 to quarter 4 of 2024, the overall utilization rates were increased, while over the period from quarter 1 to quarter 3 of 2024 overall utilization rates were decreased. Despite the fluctuations in utilization rates, the weighted average cost per invoice remained relatively stable over the period quarter 1 of 2022 to quarter 1 of 2024, while experienced a marginal increase over the period from quarter 1 to quarter 2 of 2024.

A4.2.5. Assumptions used for the projections

This section outlines the primary scheme-specific actuarial assumptions adopted to project claims expenditure for the various healthcare categories from 2024 onwards. These assumptions are focused on two key variables: projected utilisation rates and average claim costs.

For the vast majority of GHS services, the analysis of past experience data indicates that utilisation rates achieved a state of relative stability by 2024. Consequently, these observed rates have been adopted as the baseline for projecting future utilisation levels throughout the remainder of the projection period.

Table A4.9 shows the assumption of inpatient DRGs' quarterly utilization rates by age group and gender over the years from 2024 to 2033.

► **Table A4.9. Inpatient DRGs, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	1.4	4.3	1.5	4.4	1.5	4.5	1.5	4.5
4–7	3.0	2.4	3.0	2.3	3.1	2.3	3.1	2.3
8–14	1.8	1.5	1.9	1.5	1.9	1.5	1.9	1.5
15–17	2.3	2.1	2.4	2.1	2.4	2.1	2.4	2.1
18–25	2.4	3.1	2.4	3.1	2.4	3.1	2.5	3.2
26–30	2.4	5.0	2.4	5.1	2.5	5.2	2.5	5.2
31–35	2.6	6.7	2.7	6.8	2.7	6.8	2.7	6.9
36–40	3.0	6.4	3.0	6.5	3.1	6.6	3.1	6.6
41–45	4.3	6.6	4.3	6.7	4.4	6.8	4.4	6.8
46–50	6.7	8.0	6.8	8.2	6.8	8.3	6.9	8.3
51–55	6.7	7.7	6.8	7.9	6.9	8.0	6.9	8.0
56–60	8.5	7.5	8.6	7.6	8.7	7.6	8.7	7.6
61–65	11.1	8.8	11.5	9.0	11.6	9.1	11.6	9.1
66–70	15.7	11.2	16.0	11.7	16.1	11.8	16.2	11.8
71–75	20.4	14.4	20.8	14.6	21.0	14.7	21.1	14.8
76–80	25.4	16.6	25.7	17.0	25.9	17.1	26.0	17.2
81–85	26.1	16.2	26.6	16.6	26.8	16.7	27.0	16.8
86–90	26.9	16.6	27.1	16.7	27.3	16.9	27.4	16.9
91–95	26.3	16.7	26.2	16.6	26.4	16.7	26.5	16.8
96–100	34.0	19.5	34.6	19.6	34.9	19.8	35.1	19.9

Tables A4.10 to A4.12 shows the assumption of inpatient Z items quarterly utilization rates by age group and gender for the years from 2024 to 2033.

► **Table A4.10. Inpatient Z consumables, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	2.5	1.3	2.5	1.3	2.5	1.3	2.5	1.3
4–7	1.8	1.3	1.8	1.3	1.8	1.3	1.8	1.3
8–14	1.0	0.6	1.0	0.6	1.0	0.6	1.0	0.7
15–17	1.4	0.9	1.4	0.9	1.4	0.9	1.4	0.9
18–25	2.1	2.5	2.1	2.5	2.1	2.6	2.1	2.6
26–30	1.7	4.2	1.7	4.2	1.7	4.3	1.7	4.3
31–35	2.1	5.9	2.1	5.9	2.1	5.9	2.1	6.0
36–40	2.4	5.0	2.4	5.0	2.4	5.0	2.4	5.0
41–45	2.9	5.3	3.0	5.3	3.0	5.4	3.0	5.4
46–50	4.2	5.1	4.3	5.1	4.3	5.1	4.3	5.2
51–55	5.8	6.6	5.8	6.6	5.8	6.7	5.9	6.7
56–60	7.9	6.2	8.0	6.2	8.0	6.3	8.1	6.3

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
61–65	10.1	7.6	10.2	7.6	10.3	7.6	10.3	7.7
66–70	14.2	10.2	14.2	10.2	14.4	10.3	14.4	10.3
71–75	18.0	13.1	18.1	13.1	18.2	13.2	18.3	13.3
76–80	23.7	15.0	23.8	15.0	24.0	15.2	24.1	15.2
81–85	20.8	13.0	20.9	13.1	21.0	13.2	21.1	13.2
86–90	21.4	13.9	21.5	14.0	21.7	14.1	21.8	14.1
91–95	18.1	11.0	18.1	11.1	18.3	11.2	18.4	11.2
96–100	10.4	6.1	10.5	6.2	10.5	6.2	10.6	6.2

► **Table A4.11. Inpatient Z drugs, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	4.1	3.2	4.2	3.1	4.3	3.1	4.3	3.1
4–7	1.3	0.8	1.2	0.9	1.2	0.9	1.2	0.9
8–14	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.9
15–17	0.7	0.9	0.5	0.9	0.5	0.9	0.5	0.9
18–25	1.1	1.6	1.0	1.6	1.0	1.6	1.0	1.6
26–30	0.9	3.3	0.9	4.2	0.9	4.2	1.0	4.2
31–35	1.1	3.6	1.2	3.0	1.2	3.0	1.2	3.0
36–40	1.3	4.0	1.3	4.9	1.3	4.9	1.3	4.9
41–45	2.9	5.1	2.7	5.1	2.7	5.1	2.8	5.1
46–50	4.1	4.9	4.1	5.0	4.1	5.0	4.1	5.0
51–55	3.6	4.5	3.6	4.7	3.6	4.8	3.6	4.8
56–60	5.6	4.8	5.8	4.9	5.8	4.9	5.9	5.0
61–65	8.2	4.9	9.0	5.0	9.1	5.0	9.1	5.0
66–70	12.2	8.1	12.2	8.6	12.3	8.7	12.3	8.7
71–75	15.9	10.5	15.6	10.3	15.8	10.4	15.8	10.4
76–80	20.6	12.6	21.3	12.8	21.4	12.9	21.6	12.9
81–85	19.6	9.0	20.1	8.5	20.2	8.5	20.3	8.6
86–90	14.2	3.2	14.1	3.7	14.2	3.8	14.3	3.8
91–95	3.7	6.6	3.7	6.6	3.7	6.6	3.8	6.7
96–100	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9

► **Table A4.12. Inpatient Z procedures and fixed fee items, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	5.0	4.0	5.2	4.2	5.2	4.2	5.3	4.2
4–7	2.9	1.4	3.0	1.2	3.1	1.2	3.1	1.2
8–14	1.5	1.3	1.7	1.3	1.7	1.3	1.7	1.3
15–17	1.9	1.6	1.9	1.7	1.9	1.7	1.9	1.7
18–25	2.1	2.8	1.9	2.9	1.9	2.9	1.9	2.9
26–30	2.2	4.9	2.2	4.8	2.2	4.8	2.2	4.8
31–35	2.3	6.6	2.4	6.6	2.4	6.6	2.4	6.7
36–40	2.7	6.3	2.7	6.3	2.8	6.4	2.8	6.4
41–45	4.0	6.6	4.0	6.6	4.1	6.7	4.1	6.7
46–50	6.5	7.9	6.6	8.0	6.7	8.1	6.7	8.1
51–55	6.3	7.5	6.1	7.6	6.2	7.7	6.2	7.7
56–60	8.1	7.3	8.1	7.3	8.2	7.4	8.2	7.4
61–65	10.8	8.7	10.8	8.8	10.9	8.9	10.9	8.9
66–70	15.8	11.2	15.9	11.4	16.0	11.5	16.1	11.6
71–75	20.7	14.8	20.8	15.2	20.9	15.4	21.0	15.4
76–80	25.5	16.3	25.8	16.8	26.0	16.9	26.1	17.0
81–85	25.7	16.0	25.9	16.3	26.1	16.4	26.2	16.5
86–90	24.9	15.2	25.0	15.7	25.2	15.8	25.3	15.9
91–95	18.2	10.9	19.0	11.1	19.2	11.2	19.3	11.3
96–100	10.7	4.3	11.7	5.0	11.8	5.1	11.9	5.1

Table A4.13 shows the assumption of outpatient specialists' quarterly utilization rates by age group and gender for the years from 2024 to 2033.

► **Table A4.13. Outpatient specialists, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	33.1	26.1	35.4	27.1	35.6	27.2	35.6	27.2
4–7	37.1	28.0	38.2	28.9	38.4	29.1	38.4	29.1
8–14	39.6	35.2	41.0	36.0	41.2	36.2	41.2	36.2
15–17	54.8	54.4	55.3	54.6	55.5	54.8	55.5	54.8
18–25	51.7	82.0	51.4	82.2	51.7	82.6	51.7	82.6
26–30	53.6	114.6	54.2	115.9	54.5	116.5	54.5	116.5
31–35	59.8	135.1	60.6	136.7	60.9	137.3	60.9	137.3
36–40	65.6	131.4	66.5	133.0	66.8	133.6	66.8	133.6
41–45	76.7	139.5	77.6	141.1	78.0	141.8	78.0	141.8
46–50	91.0	156.4	92.1	158.5	92.6	159.3	92.6	159.3
51–55	107.8	172.2	109.5	174.6	110.0	175.5	110.0	175.5
56–60	129.1	187.4	131.1	190.4	131.8	191.3	131.8	191.3

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
61–65	156.8	203.1	159.4	206.3	160.2	207.3	160.2	207.3
66–70	197.1	222.4	200.7	226.5	201.7	227.6	201.7	227.6
71–75	218.4	235.5	222.9	239.6	224.0	240.8	224.0	240.8
76–80	256.8	244.0	261.7	248.4	263.0	249.7	263.0	249.7
81–85	243.7	210.8	248.3	214.3	249.5	215.4	249.5	215.4
86–90	229.0	167.2	232.8	169.7	233.9	170.5	233.9	170.5
91–95	176.9	115.6	179.1	117.2	180.0	117.8	180.0	117.8
96–100	157.0	92.0	157.3	94.2	158.1	94.7	158.1	94.7

Table A4.14 shows the assumption of allied health professionals' quarterly utilization rates by age group and gender for the years from 2024 to 2033.

► **Table A4.14. Allied health professionals, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	45.7	28.5	56.6	35.2	59.5	37.0	62.5	38.9
4–7	79.4	41.0	106.3	53.7	111.8	56.6	117.4	59.4
8–14	30.7	25.1	39.3	31.6	41.8	33.8	44.1	35.7
15–17	31.8	33.3	40.0	41.8	42.5	45.0	44.8	47.6
18–25	23.8	28.6	28.3	33.3	30.1	36.1	31.7	38.4
26–30	25.8	34.0	31.0	40.7	33.1	44.0	34.9	46.7
31–35	27.0	32.5	32.6	38.7	34.7	41.7	36.6	44.2
36–40	26.8	31.5	32.7	38.2	34.8	41.0	36.6	43.3
41–45	28.7	34.4	34.8	41.6	37.0	44.4	38.9	46.9
46–50	30.6	40.4	37.3	49.8	39.5	53.0	41.6	55.9
51–55	34.1	47.9	41.7	58.6	44.1	62.3	46.4	65.7
56–60	36.7	52.0	45.0	64.0	47.6	68.0	50.1	71.7
61–65	39.5	54.5	48.0	66.6	50.7	70.7	53.3	74.5
66–70	46.6	60.0	56.8	74.5	60.0	78.8	63.1	83.0
71–75	48.1	62.9	58.2	77.4	61.5	81.8	64.7	86.0
76–80	53.9	63.4	65.8	78.1	69.4	82.4	73.0	86.6
81–85	52.8	59.2	64.3	73.0	67.8	76.8	71.2	80.7
86–90	57.5	53.2	71.8	65.9	75.5	69.4	79.4	72.9
91–95	43.9	45.3	53.3	55.8	56.1	58.7	59.0	61.7
96–100	66.5	40.7	77.9	51.5	81.9	54.3	86.1	57.1

Table A4.15 shows the assumption of dentists' quarterly utilization rates by age group and gender for the years from 2024 to 2033.

► **Table A4.15. Dentists, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	1.9	2.2	2.2	2.4	2.2	2.4	2.2	2.4
4–7	7.5	8.0	8.0	8.5	8.0	8.5	8.0	8.5
8–14	10.4	10.7	11.0	11.3	11.0	11.3	11.0	11.3
15–17	9.5	10.1	10.2	10.7	10.2	10.7	10.2	10.7
18–25	8.6	9.8	9.2	10.5	9.2	10.5	9.2	10.5
26–30	8.9	10.1	9.4	10.6	9.4	10.6	9.4	10.6
31–35	9.1	9.9	9.5	10.5	9.5	10.5	9.5	10.5
36–40	8.8	9.6	9.1	10.1	9.1	10.1	9.1	10.1
41–45	8.8	9.4	9.2	9.9	9.2	9.9	9.2	9.9
46–50	8.3	8.9	8.8	9.5	8.8	9.5	8.8	9.5
51–55	7.9	8.8	8.3	9.3	8.3	9.3	8.3	9.3
56–60	7.8	8.8	8.3	9.3	8.3	9.3	8.3	9.3
61–65	7.5	8.6	7.8	9.1	7.8	9.1	7.8	9.1
66–70	7.4	8.4	7.8	8.9	7.8	8.9	7.8	8.9
71–75	6.5	7.4	6.8	7.8	6.8	7.8	6.8	7.8
76–80	6.4	6.4	6.7	6.8	6.7	6.8	6.7	6.8
81–85	5.0	4.8	5.1	5.0	5.1	5.0	5.1	5.0
86–90	4.2	3.3	4.2	3.4	4.2	3.4	4.2	3.4
91–95	2.9	2.4	3.1	2.5	3.1	2.5	3.1	2.5
96–100	2.2	1.6	2.3	1.8	2.3	1.8	2.3	1.8

Table A4.16 shows the assumption of nurses' and midwives' quarterly utilization rates by age group and gender for the years from 2024 to 2033.

► **Table A4.16. Nurses and midwives, quarterly utilization rate assumption, by age group and gender, 2024–2033 (percentages)**

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
0–3	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0
4–7	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
8–14	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2
15–17	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
18–25	0.3	0.5	0.3	0.6	0.4	0.7	0.4	0.7
26–30	0.6	2.4	0.6	2.7	0.7	3.0	0.7	3.0
31–35	0.6	3.4	0.7	3.9	0.8	4.3	0.8	4.3
36–40	0.9	1.7	1.0	1.9	1.1	2.1	1.1	2.1
41–45	1.1	0.9	1.2	1.1	1.3	1.2	1.3	1.2
46–50	1.1	1.0	1.3	1.2	1.4	1.3	1.4	1.3
51–55	1.4	1.3	1.6	1.5	1.8	1.6	1.8	1.6
56–60	2.1	1.9	2.3	2.2	2.6	2.4	2.6	2.4

Age group	2024		2025		2026		2027–2033	
	Male	Female	Male	Female	Male	Female	Male	Female
61–65	2.1	2.6	2.4	3.0	2.7	3.3	2.7	3.3
66–70	3.5	3.6	3.9	4.1	4.3	4.5	4.3	4.5
71–75	4.1	4.8	4.7	5.4	5.1	6.0	5.1	6.0
76–80	6.8	8.3	7.7	9.5	8.5	10.4	8.5	10.4
81–85	10.6	17.2	12.0	19.6	13.2	21.6	13.2	21.6
86–90	23.1	29.5	26.2	33.6	28.9	36.9	28.9	36.9
91–95	34.7	45.5	39.4	51.8	43.4	57.0	43.4	57.0
96–100	59.9	82.6	68.2	94.0	75.0	103.4	75.0	103.4

Table A4.17 shows the assumption of laboratories' monthly utilization rates and average number of points per invoice, by test category over the projection period 2024–2033.

► **Table A4.17. Assumptions of laboratory monthly utilization rate and average number of points per invoice, by test category, 2024–2033**

Laboratory test category	2024		2025		2026–2033	
	Monthly utilization rate (%)	Average number of points per invoice	Monthly utilization rate (%)	Average number of points per invoice	Monthly utilization rate (%)	Average number of points per invoice
Biochemistry and Immunology	16.8	32.4	17.3	32.4	17.3	33.0
Haematology and Microbiology	11.0	9.5	11.3	9.5	11.3	9.7

Table A4.18 presents the pharmacies and pharmaceuticals for outpatient care assumptions applied over the projection period 2024–2033, including pharmacist fee parameters (monthly utilisation rate, average number of packs dispensed, point value, and annual cost of the overnight fee). It also includes the monthly utilisation rates for outpatient drugs (Phase I and Phase II) and for outpatient medical devices and consumables, together with the corresponding average cost per invoice for each category.

► **Table A4.18. Pharmacies and pharmaceuticals for outpatient care, monthly utilization rates and other projection assumptions, 2024–2033**

	2024	2025	2026	2027–2033
Pharmacist fee – Monthly utilization rate	72.2	72.2	72.2	72.2
Pharmacist fee – Average number of packs dispensed	2.5	2.5	2.5	2.5
Pharmacist fee – Point value	1.67	1.67	1.67	1.71
Pharmacist fee per overnight – Annual cost (€)	550 000	550 000	550 000	550 000
Outpatient drugs Phase I – Monthly utilization rate	67.2	68.0	68.0	68.0
Outpatient drugs Phase II – Monthly utilization rate	1.9	2.3	2.3	2.3
Outpatient medical devices and consumables – Monthly utilization rate	3.5	3.6	3.6	3.6
Outpatient drugs Phase I – Average cost per invoice	19	19	20	20
Outpatient drugs Phase II – Average cost per invoice	487	619	633	647
Outpatient medical devices and consumables – Average cost per invoice	35	37	40	43

Table A4.19 shows the personal doctors' annual capitation reimbursement rates which are projected to increase in line with the relevant medical inflation rate for the years 2026 onwards.

► **Table A4.19. Personal doctors' current capitation reimbursement annual rates (euros)**

Age Group	Annual rates (€)		
	01/01/2022 – 31/05/2022	01/06/2022 – 31/12/2023	01/01/2024 – 31/12/2025
0–3	210	186	186
4–7	155	137	137
8–14	91	80	80
15–17	91	80	80
18–50	83	66	66
51–70	117	94	94
71+	145	116	116

Accident and emergency (A&E) departments of private hospitals follow the point system reimbursement method, while the A&E departments of public hospitals along with the ambulances are reimbursed based on an annual fixed guaranteed amount. These guaranteed amounts are projected to slightly increase in 2027 and to be subsequently adjusted in line with the relevant medical inflation rate for the years 2027 onwards.

Table A4.20 shows the assumptions of the quarterly utilization rates in A&E departments of private hospitals and the average number of points per invoice over the project period 2024–2033.

► **Table A4.20. A&E departments, private hospitals, assumptions of quarterly utilization rate and average number of points per invoice, 2024–2033**

	2024		2025		2026–2033	
	Quarterly utilization rate (%)	Average number of points per invoice	Quarterly utilization rate (%)	Average number of points per invoice	Quarterly utilization rate (%)	Average number of points per invoice
A&E departments, private hospitals	3.15	5.15	3.15	5.15	3.20	5.15

Table A4.21 shows the A&E departments of public hospitals and ambulances annual fixed cost. The amounts with respect to 2024, 2025 and 2026 have been agreed and thereafter, for the years 2027–2033, they are projected to slightly increase in 2027 and to be subsequently adjusted in line with the relevant medical inflation rate.

► **Table A4.21. A&E departments of public hospitals, and ambulances, annual fixed cost (euros)**

	2024	2025	2026	2027–2033
A&E department of public hospitals	23 346 992	25 504 721	26 014 815	27 315 556
Ambulances	16 821 105	17 157 527	17 500 678	18 500 678

Table A4.22 shows the assumption used for the GHS expenditure on rehabilitation and palliative care. From 2027 onwards these amounts are projected to increase in line with the relevant medical inflation rate.

► **Table A4.22. Rehabilitation and palliative care, assumption of annual cost, for the years 2024–2033 (euros)**

	2024	2025	2026	2027–2033
Palliative care in institutions	6 157 451	7 389 817	8 712 242	8 712 242
Rehabilitation in institutions	11 776 357	13 354 761	15 262 584	15 262 584