



# 1. Context

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Healthcare systems are going to face enormous quantitative and qualitative challenges over the coming two decades in ensuring that the required amount of qualified personnel is available. Firstly, they must secure the next generation of young talent because a large proportion of those currently working will be reaching retirement age over the next 20 years. Secondly, they will need to be able to respond to the increase in demand for healthcare services caused due to population ageing. Finally, they will have to adapt to qualitative changes, a process which necessitates a reorientation of the care models. These changes are derived from the increasing prevalence of chronic conditions which require different forms of care than acute medical conditions.

The recruitment of foreign health professionals will not suffice in meeting the personnel capacity requirements. Indeed, the majority of OECD countries are also confronted with shortages. The transnational recruitment of qualified health professionals will inevitably intensify the competition between the countries. Overall, there is reason to fear that a worldwide shortage of health professionals may develop in the future [1].

Health professionals are the most important resource within each and every healthcare system. There is a direct correlation between the performance capability and quality of healthcare services and the number of available health professionals and their level of qualifications [2-4].

In order to prevent staff shortages, which would compromise access to high-quality healthcare services for all, it is necessary to consider how these challenges can be overcome. Indeed, this issue must be tackled with long-term sustainability in mind and on all relevant levels, from training right through to the institutions that employ these professionals. The relationship between these professionals and the performance capability of the healthcare system must be acknowledged and appreciated [5].

The Swiss Health Observatory recently published projections on Switzerland's needs with respect to healthcare professionals up until 2020 [6], with the monitoring of these needs being one of its priorities. These estimates provided an overview of the additional services and personnel required due to population ageing. However, these increased requirements must be seen within the context that the active population – the health professionals themselves – are also ageing. When these older employees retire, they will need to be replaced by a new generation of health professionals. This present analysis, instigated on the initiative of the Careum Foundation, supplements previous research undertaken by the Swiss Health Observatory by specifically highlighting the impact of the ageing of the workforce between now and 2030. The sources, the methodology for calculating the workforce by profession and the models for projecting the requirements and personnel are described in «Working paper 35» from the Swiss Health Observatory [6].

**Three causes****Health professionals are required due to three different situations:****Retirement**

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Replacing those leaving due to retirement. This is a «natural», inevitable requirement (chapter 2);

**Drop out**

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Drop out or attrition, i.e. skilled labour leaving to join other industries or sectors, other healthcare systems (moving abroad, complementary medicine, wellness) or leaving the labour market completely (chapter 3);

**Increased demand**

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Increases in demand for services and personnel due to an increased need for care within the population (chapter 4).

## 2. Personnel required to compensate for retirements

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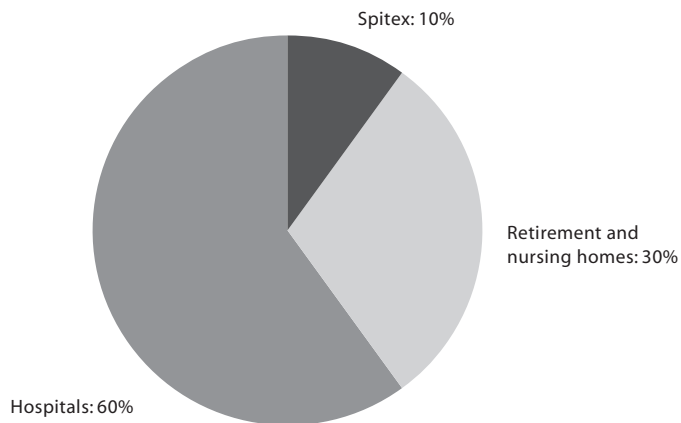
In 2006, some 330,000 persons, i.e. 8% of the active population, were employed in the areas of therapy and healthcare. This figure comprises all of those who worked in healthcare institutions and in the private, ambulatory sector (doctors' surgeries, pharmacies).

**Health professionals represent 8% of the active population**

In this study, only those working in the most common healthcare institutions are examined. In 2006, this applied to 200,000 persons, spread over three types of institutions: hospitals, retirement and nursing homes and Spitex services (assistance and care at home) (fig. 1).

**Almost 2/3 of this workforce work in hospitals, nursing homes and in Spitex (home care) services**

**Fig. 1**  
**Health professionals by institution type, Switzerland, 2006**



Sources: FSO: Hospital statistics 2006, Somed 2006, FSIO: Spitex 2006

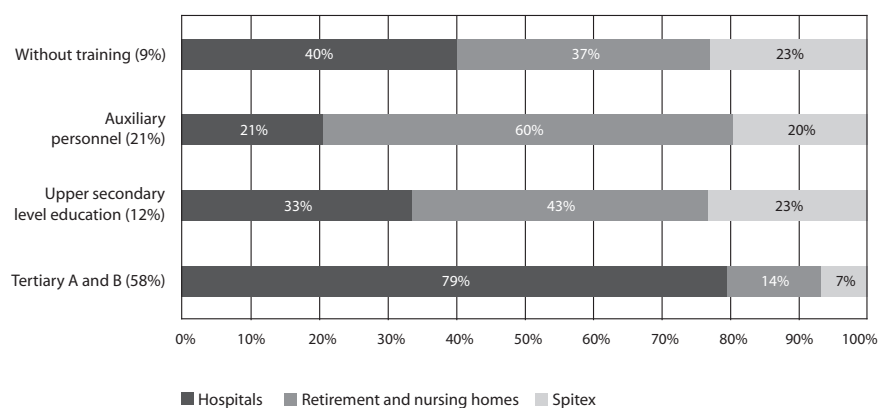
In 2006, the proportion of women ranged between 78% in hospitals and 92% in retirement and nursing homes. The nationality is only known for hospital staff where 34% originated from abroad. On the basis of available figures, it is not possible to ascertain what proportion of these persons was trained abroad and what proportion represents foreign nationals trained in Switzerland.

**80% of health professionals are women**

The workforce was predominantly made up of persons who have completed tertiary level A (universities / universities of applied sciences) or B (colleges of higher vocational education and training) education (56%). As highlighted by figure 2, persons who have completed tertiary level education primarily work in hospitals. In retirement and nursing homes, auxiliary personnel without specific training form the largest personnel category (40%). In Spitex services, half of the personnel have completed tertiary or secondary level education and the other half are made up of auxiliary personnel without training.

**The personnel are highly qualified: 60% of health professionals have completed tertiary level education**

**Fig. 2**  
**Breakdown of health professionals (in percent) by education level, type of training and place of work for the whole of Switzerland, 2006**



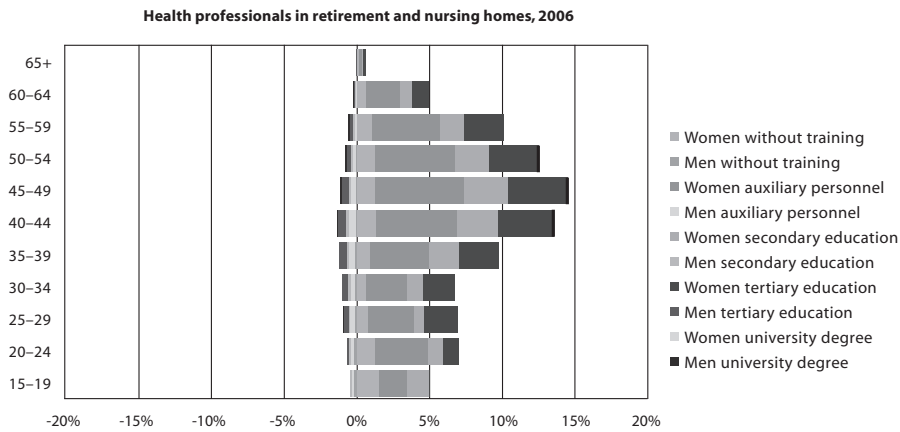
Sources: FSO: Hospital statistics 2006,  
 Somed 2006, FSIO: Spitex 2006

### Health professionals are also affected by demographic ageing

#### The personnel are older in institutions for long-term care

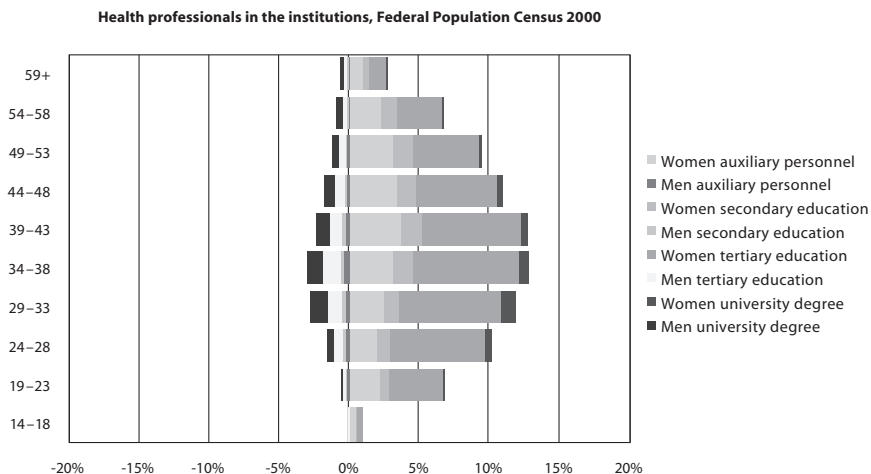
The workforce age pyramid is different in the various types of healthcare institutions. The Federal Population Census from the year 2000 and the statistics from socio-medical institutions show that personnel are older in socio-medical institutions (fig. 3). A closer look at this population shows that 30% of this workforce will have reached retirement age by the year 2020 and 60% of the personnel will have retired by 2030. Spitex services are faced with a comparable situation.

It is therefore clear that institutions for long-term care will be most affected by the wave of retirements.

**Fig.3****Age pyramid of health professionals in retirement and nursing homes by education level, 2006**

Source: FSO: Somed 2006

Overall, the Federal Population Census from the year 2000 provides us with a false view of reality because the workforce age pyramid (fig. 4) appears «rejuvenated» compared with fig. 3 (health professionals in retirement and nursing homes). This can be attributed to the composition of personnel: the personnel in hospitals are younger than those in homes or in Spitex services. In hospitals, 15% of employees will have reached retirement age by the year 2020. By the year 2030, 39% of the workforce will have reached retirement age. However, experts point out that early retirement is very common in the healthcare sector [7]. This explains the very low proportion of over 54s in figure 4.

**Hospitals have younger personnel****Fig.4****Age pyramid of health professionals in hospitals, retirement and nursing homes and in Spitex services by education level, 2000**

Source: FSO: Federal Population Census 2000

**Almost half of the health professionals will need to be replaced by 2030** Provided that the distribution by age and gender remains stable in all health-care institutions and assuming that women and men reach retirement age at 64 and 65 respectively – a very conservative scenario indeed – approx. 20% of health professionals will need to be replaced. Consequently, the number of persons leaving due to retirement will more than double between 2020 and 2030 and reach 47% in total (table T1). One must bear in mind that these estimates do not take early retirements into consideration [7].

<b>These losses are unavoidable</b>	<b>T1 Health professionals reaching retirement age</b>	<b>2020</b>	<b>2030</b>
	<b>Estimated number of departures based upon the workforce as of 2006 (200,000)</b>	<b>40'000 (20%)</b>	<b>94'000 (47%)</b>
	Early retirements: 1% from each cohort from the age of 55	44'000 (22%)	108'000 (55%)

**The effects of regular and early retirements are more pronounced after 2020** If, starting from the age of 55, 1% from each cohort retires early, the additional need for personnel will increase by around 2% by 2020. After 2020, the proportion of these «avoidable» losses could quadruple and reach 8%. This equates to the entire personnel who will, at this time, be over 55 years of age.

**Very little can be done to prevent these losses** To contain the large number of losses, personnel should be encouraged to remain in the profession beyond the age of 65 and the large-scale hiring of young qualified personnel must be made possible.

### 3. Personnel required to compensate for drop out

When personnel switch from one area of the healthcare system to another, this is, by and large, unproblematic and does not lead to a loss of labour.

However, losses to other economic sectors (drop out, attrition) mean that more personnel must be hired in addition to those already required due to «natural» losses. However, it is not possible to quantify this additional requirement from the currently available data. This additional requirement increases with the mobility of the population and the turnover in the labour market. As a result, drop out could become more important in the future. This will lead to stiffer labour market competition between all industries and sectors with respect to the retention of qualified personnel.

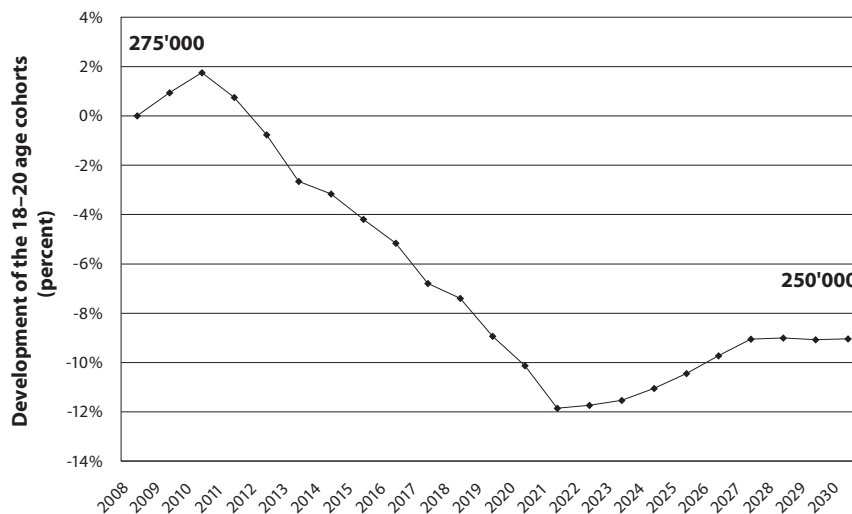
There will also be stiffer competition when it comes to training and education in the healthcare sector. Between now and 2030, the number of persons aged between 18 and 20, i.e. the years in which persons enter their chosen profession, will regularly drop by 1-2% per annum. In clear terms, this means 25,000 less persons in 2030 than in 2008. Because this will intensify the pressure on the labour market, institutions within the healthcare sector will need to be particularly innovative in order to remain attractive (fig. 5).

**Labour turnover within the healthcare sector**

**Losses to other economic sectors due to competition in the labour market**

**Competition in the education market**

**Fig. 5**  
**Development of the 18-20 age cohorts in Switzerland between 2008 and 2030**  
**(in percent)**



**Innovation is vital**

Source: FSO: Population development scenario A-00-2005/08



## 4. Personnel required to compensate for the increased need for care within the population

The majority of factors that determine the future need for health professionals are poorly documented. In literature, the values for these determinants are generally kept constant [8]. Future care needs are dependent on the following elements:

### **Needs in terms of care and support**

This depends on the demographic development and the health of the population.

### **Needs in terms of services**

This depends on the way in which healthcare services are used as well as on the intensity of the services provided.

### **Needs in terms of positions**

This depends on how productive the various institutions are at providing these services. Depending on the task, the personnel may come from different fields and have different levels of education (skill and grade mix). This element can be influenced by changes in the organisation and mode of care delivery as well as by the skill mix.

### **Needs in terms of personnel to be recruited**

This depends on the number of full-time positions that are filled by part-time workers.

### **Needs in terms of trainees**

This depends on the age distribution of the current personnel as well as on the institutions' ability to increase the length of time that personnel stay in the profession and their ability to ensure that personnel remain loyal to their employer.

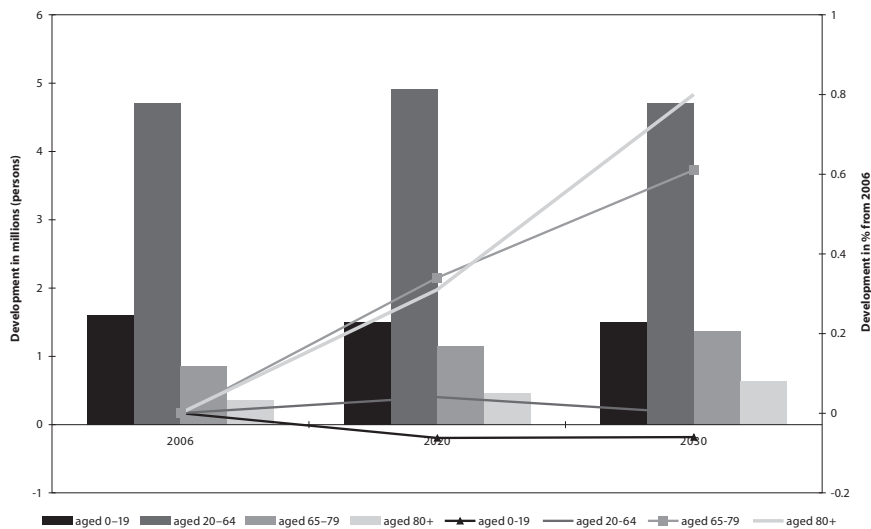
The projections examine three effects separately: demographic ageing, improvement in health and the productivity gain of the institutions. **The other determinants are kept constant.**

### 4.1 Expected demographic development up until 2030

#### **No growth in the active population**

According to the «medium» scenario with respect to population development up until 2030 from the FSO from the year 2005, there will be an increase of 800,000 over 65s (+66%). The number of over 80s will almost double over the same period. This increase is due to 65 year olds having a higher life expectancy and the baby boomers reaching retirement age. In contrast, the active population – the 20 to 64 category – will not grow (fig. 6).

**Fig. 6**  
**Development of the population of Switzerland by age groups between 2006 and 2030**



Source: FSO; Population development scenario A-00-05

The proportion of over 80s – the main recipients of long-term care – will grow significantly faster between 2020 and 2030 than prior to 2020. As a result, the need for additional healthcare services will particularly increase after the year 2020.

**Increasing proportion  
of over 80s by 2020**

## 4.2 Impact of population ageing on the need for health professionals

Based on the assumption that all of the above-mentioned parameters are kept constant – this implies that care needs remain the same as they were in 2006 – demographic development alone could necessitate an increase in the workforce of 80,000 by the year 2030 (T2).

T2 Demographic effects	2006	2020	2030	Diff 2006-2030
Days of hospitalisation	13.0 million	15.5 million	17.0 million	+4.0 million
Days in retirement/nursing homes	29.0 million	41.0 million	53.0 million	+24.0 million
Spitex clients	0.27 million	0.33 million	0.40 million	+0.13 million
Positions	0.14 million	0.17 million	0.20 million	+0.06 million
<b>Persons</b>	<b>0.20 million</b>	<b>0.25 million</b>	<b>0.28 million</b>	<b>+0.08 million</b>
Increase		+25%	+40%	

**Unavoidable increase in demand** Because the demographic development of the population is inevitable, the higher proportion of old people alone creates an increased need for healthcare services and personnel.

**Is this scenario too pessimistic?** It is highly unlikely that our system can recruit and finance such a large quantity of additional health professionals in a sustainable manner. At best, the need may be curtailed somewhat by the better health of the elderly population. And this is not improbable if people live longer.

#### 4.3 Impact of population ageing coupled with an improvement in health among the elderly population

**Reducing needs by means of health promotion measures** This large increase in healthcare services can be reduced by attempting to positively influence the health of the elderly population through the introduction of health promotion and health maintenance measures. Furthermore, the mode of care delivery can also be adapted, in particular by reducing the proportion of intramural care.

If it is possible to delay recourse to long-term care (retirement and nursing homes, as well as to Spitex services) by one year and to shorten the period of hospitalisation, the amount of personnel to be recruited by 2030 (provided the other parameters remain unchanged) drops to 50,000 (T3). The more effective the measures for improving health prove to be, the more the additional need for qualified personnel can be reduced.

<b>T3 Demographic effects and improvement in health</b>	<b>2006</b>	<b>2020</b>	<b>2030</b>	<b>Diff 2006-2030</b>
Days of hospitalisation	13.0 million	13.5 million	15.0 million	+2.0 million
Days in retirement/nursing homes	29.0 million	40.0 million	47.0 million	+18.0 million
Spitex clients	0.27 million	0.32 million	0.38 million	+0.11 million
Positions	0.14 million	0.15 million	0.18 million	+0.04 million
<b>Persons</b>	<b>0.20 million</b>	<b>0.22 million</b>	<b>0.25 million</b>	<b>+0.05 million</b>
Increase		+10%	+25%	

**The increasing need for personnel most notably affects the homes and Spitex services** It is important to stress at this point that almost 90% of the additionally required health professionals will need to be recruited to work in long-term care institutions (homes, Spitex). However, as illustrated above, these are precisely the institutions that are most affected in relative terms by losses due to retirement.

#### 4.4 Optimisation of «productivity»: productivity gain of 0.5% per annum

The term productivity describes the relationship between the available manpower and the volume of healthcare services that an institution can provide within a given time frame. The type of services varies according to the institution: days of hospitalisation, days spent in retirement and nursing homes or the number of Spitex clients. The labour force is measured in terms of the number of full-time equivalent positions, broken down by type and level of education. Productivity develops differently in the various sectors of the healthcare system.

If the period of hospitalisation continues to decrease, it may be assumed that this equates to a productivity gain by the hospitals.

However, the more that people leave hospital early, the more dependent they will become on more complex and more intensive ambulatory care. A Spitex full-time equivalent can therefore care for fewer clients. The same applies to personnel in retirement and nursing homes if the recipients of care are older and suffering from multiple illnesses. As a result, the overall productivity of retirement and nursing homes could also drop.

Productivity gains through innovation and advances in technology are also conceivable with all three institution types. However, technological progress can necessitate new skills and therefore result in an additional need for qualified personnel.

Finally, productivity can also be improved by changing the way in which healthcare processes are organised, for example by introducing new modes of care delivery with a different skill mix (managed care models, walk-in clinics) and by changing the way in which information is communicated (telemedicine, patient information via the Internet) [10-12].

According to the results of several studies, improving productivity is the most advantageous option when it comes to reducing personnel capacity requirements [8]. The testing of this hypothesis illustrates its potential effect. With an annual productivity gain of 0.5% (an optimistic scenario), in the year 2030, one full-time position could yield an additional 19 days of work in hospitals, attend to an additional 0.3 persons in retirement or nursing homes or care for an additional 3.4 Spitex clients. To provide the same volume of services as per table T2, the need for additional personnel could be halved to 25,000 (T4).

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**Shortening of the hospitalisation period**

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**Spitex and homes: more complex care**

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**Technological progress**

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**Organisation of care**

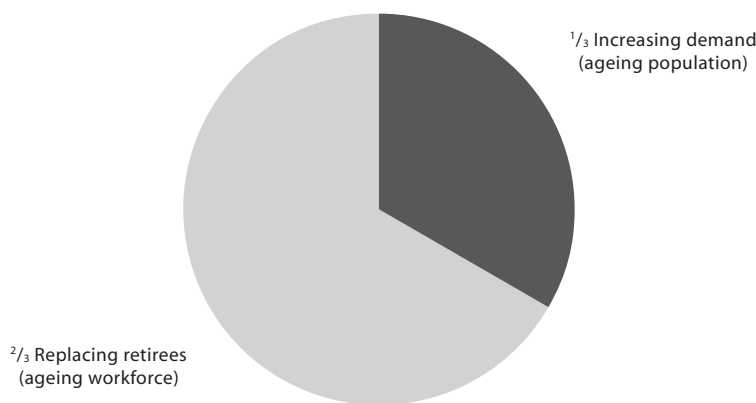
<b>T4 Demographic effects, improvement in health and productivity gain</b>	<b>2006</b>	<b>2020</b>	<b>2030</b>	<b>Diff 2006-2030</b>
Positions	0.14 million	0.15 million	0.18 million	+0.04 million
<b>Persons</b>	<b>0.20 million</b>	<b>0.21 million</b>	<b>0.23 million</b>	<b>+0.03 million</b>
Increase		+2.5%	+12.5%	

Thus even with a very optimistic scenario with regard to increases in productivity in the institutions, large increases in personnel capacity requirements are unavoidable.

Personnel capacity requirements are also dependent on the capacity utilisation level. The more this level increases, the more the amount of additionally required personnel decreases.

*The ageing population and the ageing of health professionals are creating a strong need for qualified healthcare professionals. According to the investigated scenarios, between 120,000 and 190,000 professionals will need to be recruited by the year 2030. Of this figure, at least two thirds are required to replace those reaching retirement age. The remaining third are required to cover the increased need for care and healthcare services.*

**Fig. 7. Between 120'000 and 190'000 persons will be recruited by 2030, for two reasons:**



Added to these estimates are the personnel that are required in order to replace those who drop out of the profession. Those who drop out of the healthcare system, regardless of whether they have spent a long or short period in this sector, do so to switch to other sectors of the economy, emigrate and work within a foreign healthcare system or to give up working entirely.

As previously highlighted, the active population will not grow during the observed period. As a result, the situation with regard to personnel in the healthcare sector could be intensified by competition with other economic sectors. It is also likely that competition between the various institutions within the healthcare sector will significantly increase. As a result, personnel capacity requirements will also very much depend on institutions' ability to increase the length of time that personnel stay in the profession.

The increasing need for qualified personnel is a problem that is not unique to the three areas of care analysed in this paper. It applies to all personnel, including physicians. An overall view of the situation shows that this will in fact also be the case in all sectors of the economy. This situation will create tension between the various sectors, the impact of which is difficult to predict.

In other studies, the Obsan has identified a possible shortage of practising physicians by 2030, due in part to the feminisation of this occupational category [9]. Should this indeed prove to be the case, access to care could be compromised on several levels, including with respect to preventive care delivery. One of the main consequences could be a deterioration of health within the population, especially among the elderly, which would in turn lead to an increase in demand for care.

**Losses due to drop out**

**No growth in the active population**

**Competition between the institutions within the healthcare sector as well as between the healthcare sector and other industries**

**The shortage of practising physicians increases the pressure on the care sector**

## 5. Possible areas of intervention

When interpreting the results, one must take into account the fact that these projections are based on a series of hypotheses. The transfer of patients between the various sectors of healthcare is also not taken into consideration. Although the effects of this are difficult to quantify, this will become more important in the coming years. As a result, these projections first and foremost provide a description of the magnitudes of the issues at hand and are therefore more a basis for reflection than for planning. They provide a sense of the magnitude of the personnel capacity requirements in 10-20 years time if the healthcare system continues to operate as it does today.

The results allow for the identification of the main issues that need to be tackled today if we wish to maintain high-quality healthcare that is accessible to all. Authorities concerned with solutions to the consequences of staff shortages generally propose three parallel measures [1, 8, 13]. These relate to the various determinants of personnel capacity requirements described in the above-mentioned model as well as to changes in the way in which the healthcare system operates or in the expectations of the population that uses these services. The package of measures comprises the following aspects:

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- Increasing the promotion of health** Prevention and health promotion measures that specifically aim at improving the health and preserving the autonomy of the elderly population would make it possible to reduce the overall need for care within this population and therefore have positive effects on the healthcare system, i.e. reduce the need for healthcare services and personnel and therefore reduce healthcare costs [14, 15].
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- Developing health competencies** Such measures would need to be implemented together with measures aimed at strengthening the health competencies of the elderly population and those with chronic conditions so as to enable them to take care of their own most basic needs. This would free up personnel to perform more complex healthcare duties.
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- Preserving the autonomy of the elderly population** The strengthening of ambulatory care can also contribute to the preservation of autonomy among recipients of care services and can therefore be viewed as a measure for preventing functional dependency.
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- Developing innovations in ambulatory care** Furthermore, the productivity of the system could be improved by transferring more care from intramural to ambulatory settings as this requires less logistical support and fewer accommodation facilities.
- Because the need for more complex services will increase due to the shortening of the period of hospitalisation, developing ambulatory care implies being able to provide care to more persons and being able to intensify the level of care.
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- Preventing rationing** Even if this development is not taken into consideration, the supply of ambulatory services could, in some cases, prove to be insufficient. This would be tantamount to rationing ambulatory care which would affect the health of the population in the medium term and create an additional need for care.

The goal is to optimise the productivity of the system while at the same time maintaining the same level of quality. This means that care needs to be realigned in a way that ensures that every patient can be offered the care that he or she requires, at the right place, at the required time, at the correct level of intensity and from the most appropriate professional. It is necessary to adapt the mode of care delivery and the intensity of this care based upon the most common pathologies. Moreover, human resources and competencies also need to be adjusted to the care that is needed. Better integrated processes within the healthcare sector are required in this regard in order to ensure that patients are provided with uninterrupted access to healthcare services.

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**Adapting the provision of care for the chronically ill**

The problem of short staff retention periods within the profession is poorly documented in Switzerland. One of the reasons for demotivation among healthcare professionals is the high workload caused due to staff shortages. The ability to retain personnel is therefore directly linked to the system's ability to prevent staff shortages.

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**Increasing staff retention periods**

Similarly, it is also necessary to examine the potential held by those who have dropped out of the profession and the conditions that would be conducive to them re-entering it.

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**Making it easier to re-enter the profession**

The attractiveness of health professions depends, among other factors, on how salaries fare compared with other industries. The stiffening competition for health professionals will put the current salary schemes under pressure [13].

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**Remuneration**

Staff satisfaction is also linked to the quality of the work in question. The «magnet hospital» approach could be adopted and developed further: such institutions focus on the job satisfaction among personnel in conjunction with high-quality care, which is in turn reflected in a low labour turnover rate and more effective conflict management [16].

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**Increasing staff satisfaction**

A comprehensive staff retention strategy must pursue several goals: retaining the current personnel, encouraging staff to maintain high volumes of work throughout their entire professional career, becoming attractive to the considerable recruitment potential held by those who have dropped out of the profession. To curtail the competition for qualified labour between the various institutions within the healthcare sector, it would be necessary to develop a common recruitment and staff retention strategy which creates a basis for solidarity-based action between the institutions. Without solidarity, competition could compromise care, particularly in peripheral regions.

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**Preventing competition**

Flexible working hours allow male and female employees to balance their professional and family commitments. Due to the physically demanding nature of work in health professions, this flexibility also proves beneficial to older employees.

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**Offering flexible working hours**



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- Aligning training and education to future needs** The number of training positions and the way in which courses of study are designed must be aligned to the future needs of patients and the healthcare system. At the same time, educational institutions that provide healthcare training will face stiffer competition from other occupational fields. It is necessary to examine the extent to which the current training and education programmes are in line with future care needs and how these programmes can be made more attractive to students.
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- Producing better data  
Conducting market research** The monitoring of personnel related matters and efforts to improve the quality of data would make it possible to anticipate developments in the labour market. This would increase the responsiveness of healthcare and educational institutions.
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- Relying on immigration is not a solution** The phenomenon of migration of health professionals is one common to most West European countries and the Swiss healthcare system benefits from this to a great extent. However, relying on immigration to counteract staff shortages would, without doubt, prove inadequate in solving this problem. In fact, doing so would merely shift the problem to other countries that are already worse off in this regard [17]. On the initiative of the WHO, governments of countries that greatly benefit from immigration are called upon to develop and adopt a code of conduct which takes the needs of the countries of origin of the personnel into account.



## 6. Conclusions

The level and quality of healthcare services that a healthcare system can provide depend on the financial strength of society and how much society is prepared to spend on healthcare. If we are to maintain the current level of healthcare, between 120,000 and 190,000 healthcare professionals will need to be recruited by 2030.

The ageing workforce is the single most important cause in this regard. In fact, at least two thirds of this figure are required to simply replace the current personnel when they reach retirement age. These losses are unavoidable. Only one third of the additionally required personnel in the healthcare sector can be attributed to the growing need for care due to population ageing.

Although considerable in their own right, these figures do not take the personnel who leave to join other industries or sectors into consideration. These too will need to be replaced. Because the active population will not grow during this period, such losses could become more significant. This will create strong competition between the various economic sectors with respect to the recruitment and retention of qualified personnel. If the institutions within the healthcare sector fail to remain attractive on the labour market, drop out could exacerbate these shortages even further.

To meet the growing need for care and health professionals, measures must be implemented that are effective at the population level as well as at the level pertaining to how the healthcare sector and courses of study operate. These measures must be implemented quickly because a societal conflict is looming: on the one hand, a lot of time elapses before measures are implemented and the expected effects are achieved. On the other hand, the losses due to retirement and the growing need for care are unavoidable.

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Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA  
**Federal Statistical Office FSO**



**GDK** Schweizerische Konferenz der kantonalen Gesundheitsdirektorinnen und -direktoren  
**CDS** Conférence suisse des directrices et directeurs cantonaux de la santé  
**CDS** Conferenza svizzera delle direttrici e dei direttori cantonali della sanità

The Swiss Health Observatory (Obsan) is a common institution of the Confederation and the cantons