

# Current and future workforce of general internal medicine in Switzerland: a cross-sectional study

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## Summary

**AIM OF THIS STUDY:** General internal medicine is a crucial element in healthcare systems. Understanding how many people are and will be working in this field is important to maintain and improve quality for patients in healthcare systems. This can provide a basis for political decisions.

**METHODS:** We conducted a cross-sectional study to analyse the current and future workforce of generalists (general practitioners and internists in hospitals) in Switzerland. The Swiss Society of General Internal Medicine (SSGIM) distributed a survey to all members. Respondents were asked about their current average workload in 2023 and planned workload in 2033. The responses were used to calculate full-time equivalent (FTE) for the current and future workforce of generalists and to extrapolate FTE for all active SSGIM members. To model the demand by 2033, we derived different scenarios.

**RESULTS:** Of all 6,232 active SSGIM members, 2,030 (33%) participated: 46% female, 25% (largest age group) 56-65 years old, 19% still in postgraduate training. The average workload in 2023 was 78% for female and 87% for male generalists; the FTE extrapolated to all active SSGIM members in 2023 was 5,246. By 2033, 1,935 FTEs (36%) will retire, 502 FTEs (10%) will reduce their workload, 116 FTEs (2%) will increase their workload and 2,800 FTEs (53%) will remain in the workforce with the same workload as in 2023. To maintain the same workforce as in 2023, 2,321 new FTEs (44%) will be needed by 2033. To fill this gap of 232 FTE new generalists per year, we modelled different scenarios with assumptions of interest, workload, migration and dropouts.

**CONCLUSIONS:** Within only one decade, 44% of the current workforce of generalists will disappear, mainly due to retirement and decreased workload. To fill this gap, various scenarios need to be incorporated. Politicians are called upon to create the political framework to create attractive training and working conditions for generalists to address the future demand for healthcare services.

## Introduction

Generalists (general practitioners and internists in hospitals) play a crucial role in healthcare systems. They can be defined as “first level of professional care (...), where people present their health problems and where the majority of curative and preventive health needs are satisfied” [1–3]. Generalists can handle many health issues. Where necessary they match patient needs to health care resources as well as managing and triaging undifferentiated symptoms [4]. As complexity in medicine increases, more generalists are needed [5]. A balanced number of specialists and generalists is crucial. Generalists complement a healthcare system by dealing with a wide range of health problems, prioritising needs and providing person-centred care [6].

Similar to other countries, the Swiss healthcare system is highly dependent on the immigration of physicians trained outside of Switzerland, mainly from Germany. The latest available report of 2022 showed 1209 new doctors trained within Switzerland vs. 3053 doctors whose credentials were recognised to work as doctors in Switzerland. This proportion has remained about the same since 2011 and is about equal for general internal medicine [7]. Such official numbers are helpful in following trends and proportions of trained general internal medicine, but these registries tend to overestimate the current workforce of generalists [8] due to the trend to work part-time or to the fact that these registries are not necessarily designed to exclude doctors who no longer work.

Therefore, our study is needed to assess the current and future workforce of generalists in Switzerland and to allow a data-driven approach to maintaining the workforce of generalists in the Swiss healthcare system.

## Methods

### Study design

We conducted a cross-sectional study to analyse the current and future workforce of generalists in Switzerland. The online survey was open from 7 March 2023 to 5 April 2023.

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### Data collection and process

The Swiss Society of General Internal Medicine, SSGIM (Schweizerische Gesellschaft für Allgemeine Innere Medizin, SGAIM / Société Suisse de Médecine Interne Générale, SSMIG / Società Svizzera di Medicina Interna Generale, SSMIG) is the representative body of general internal medicine. With more than 8,000 members, it is the largest medical society in Switzerland representing physicians specialising in general internal medicine in hospital and outpatient settings. SSGIM stands for reflective, critical and patient-centred medicine. It is committed to promoting young talent and ensuring the maintenance and development of professional expertise through congresses, further education and training. The society supports research and science by awarding various prizes and grants, among other endeavours [9].

The Swiss Society of General Internal Medicine's Young Talent Promotion Committee initiated this study (without a separate protocol paper), and the SSGIM sent an online survey to all newsletter subscribers, of whom >8,000 are members. The prerequisite for ordinary membership is the specialist title in general internal medicine. Resident physicians (still without the specialist title), interested master students and retired internists can become extraordinary members. Two reminders were sent. Retired members were excluded from this study.

### Questionnaire

The Swiss Society of General Internal Medicine's Young Talent Promotion Committee developed a questionnaire to assess the current and future workforce of generalists, using existing questions from similar workforce studies [8–10]. The questionnaire was an online, closed survey, sent to SSGIM members by e-mail and answered on a voluntary basis without incentives. The questionnaire was piloted for feasibility, length and clarity by peer generalists. The following data were collected: age (in 5-year clusters), gender, language, whether the person was still in residency, current place of work (multiple-choice question), current workload (total of clinical and administrative workload

with no differentiation between the two) in percentage and workload, in percentage, 10 years in the future. The survey was anonymous and, therefore, ethical approval was not required.

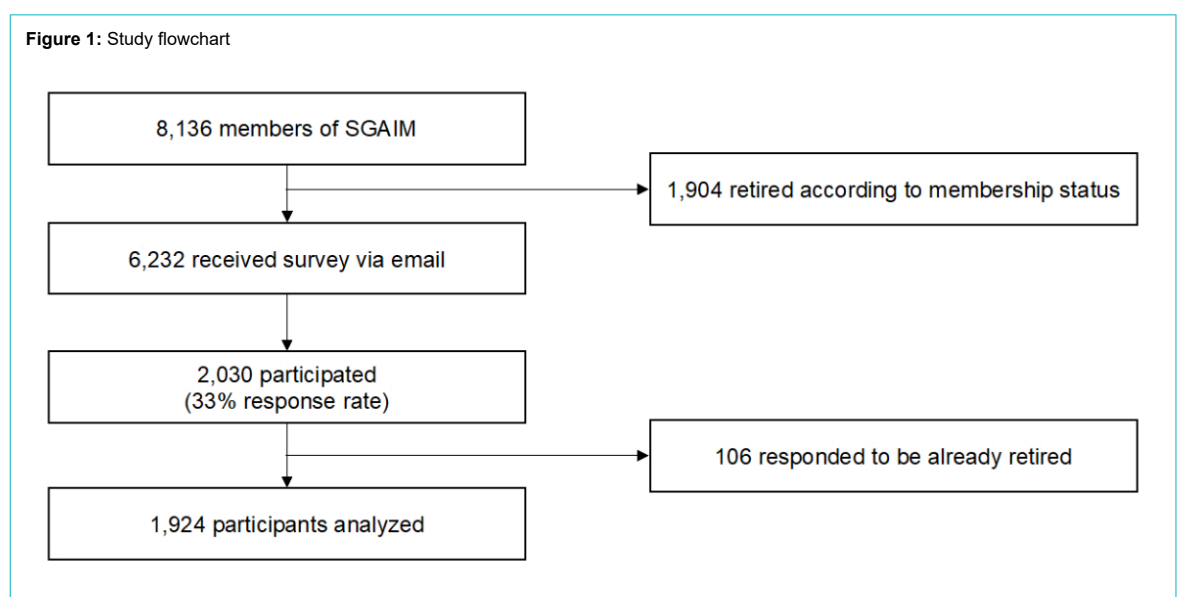
### Statistical analysis

We imported anonymised data from SurveyMonkey through Excel to Stata version 15.1 (STATA Corp., College Station TX, USA). Data was prepared for the analysis using techniques such as summarising, analysing ranges and other consistency checks. Hard coding was done to reduce the future workload to 0% for participants who said they would retire by 2033. We reduced workload to 100% for 99 respondents who reported a workload of >100%. We showed data using descriptive methods of proportions, 95% confidence intervals (CI), means and standard deviations (SD). Since the SSGIM membership database used the same data (age bands and gender), we were able to compare participant characteristics with the full target population for generalisation. We reported full-time equivalents (FTEs) by multiplying the number of participants by their current or future workload. The decrease of FTEs over time (2023 to 2033) was calculated by year for easier understanding. To model for different factors and scenarios that will have an impact on the future workforce, the author group chose to focus on 1) interest in becoming a generalist at the end of medical school, 2) workload, 3) dropouts, 4) influx from abroad, 5) early retirement and 6) population growth.

## Results

### Study population

The e-mail containing the survey was received by 6,232 active members, and 2,030 members participated (33% response rate). On average, it took participants 5 minutes to complete the survey. Excluded were 106 respondents because they reported that they had retired (figure 1).



### Baseline characteristics

Table 1 describes the baseline characteristics of participants: 46% women, 53% men and 1% non-binary. Participants' age categories were: 18% younger than 35 years, 19% aged 35 to 45, 21% aged 46 to 55, 25% aged 56 to 65, 18% older than 65. Language preference for the survey was 82% German and 18% French. Of all participants, 19% indicated that they were still training to become generalists. Multiple answers were possible regarding place of work, with 953 participants working in a practice, 273 in a hospital, and 105 in another location. Similar results were found when comparing gender and age across participants and all SSGIM members (table S1 in the appendix).

### Current workload 2023

1,417 people (missing: 507, 26%) reported an average workload of 83%. Table 2 describes the workload in 2023

stratified by gender and other baseline characteristics. The average workload was 78% for female and 87% for male generalists. The average workload for residents was 89% for females and 94% for males. For generalists having passed board examination, the average workload for women was 76%, and for men 86%. The average workload for both female and male generalists decreases with increasing age, but for those still working at age >65 years (retirement), it is 66% (female) and 68% (male).

### Workforce development by 2033

Information on planned workload in the next 10 years was provided by 1,411 physicians. A large proportion of respondents (38.4%) reported plans to retire by 2033, and another 30.5% planned to decrease their workload, while 21.5% intended to maintain their workload, and 9.6% to increase their workload. As shown in figure 2, our extrap-

**Table 1:**  
Baseline characteristics of participating generalists (n = 1,924).

Characteristics		n
Gender	Female	876 (46.0%)
	Male	1,016 (53.3%)
	Non-binary	13 (0.7%)
	Missing	19 (1.0%)
Age group	Under 35 years	344 (17.9%)
	35–45 years	358 (18.6%)
	46–55 years	398 (20.7%)
	56–65 years	484 (25.2%)
	Over 65 years	337 (17.5%)
	Missing	3 (0.2%)
Language	German	1,584 (82.3%)
	French	340 (17.7%)
	Missing	0
Postgraduate training	Ongoing	370 (19.2%)
	Completed	1,554 (80.8%)
	Missing	0
Years since board examination*	Mean years ± SD	18.9 ± 10.9
	Missing	360 (23%)
Workplace**	Practice	953
	Hospital	273
	Other***	105
	Missing	0

\* Only reported for generalists with completed postgraduate training

\*\* Multiple-choice questions; hence no proportions in %

\*\*\* Other includes teaching or research

**Table 2:**  
Current workload across age, language and board examination by gender.

Characteristics		Female generalists			Male generalists		
		n	Mean (95% CI)	p-value*	n	Mean (95% CI)	p-value*
Overall workload		663	78.3 (76.8–79.8)		754	87.0 (85.5–88.5)	
Workload by age group	<35 years	150	88.0 (85.2–90.8)	<0.001	88	94.0 (91.2–96.7)	<0.001
	35–45 years	180	72.7 (69.9–75.5)		107	89.7 (87.4–92.0)	
	46–55 years	176	77.3 (74.5–80.1)		148	92.8 (90.8–94.8)	
	56–65 years	135	78.5 (75.5–81.5)		248	92.2 (90.3–94.1)	
	>65 years	22	66.4 (53.3–79.5)		162	68.2 (63.4–72.9)	
Workload by language	German	548	78.3 (76.6–80.0)	0.90	625	87.1 (85.4–88.7)	0.86
	French	115	78.6 (75.1–82.1)		129	86.7 (83.0–90.4)	
Workload by board examination	Ongoing	136	89.0 (85.9–92.0)	<0.001	71	93.5 (90.1–97.0)	0.006
	Completed	527	75.6 (74.0–77.2)		683	86.3 (84.7–87.9)	

\* All p-values derived from univariate regression for each gender separately. For age group, a p for trend is reported.

olation of the number and workload per respondent to all SSGIM members (6,232 SSGIM members / 1,411 participants with data on workload 2023 and 2033 = factor 4.42), calculates a current (2023) workforce of 5,237 FTE, with significant changes in 2033: 1,935 FTEs (36%) lost due to retirement, 502 FTEs (10%) lost to workload reduction, 116 FTEs (2%) gained by workload increase and 2,800 FTEs (53%) remaining in the workforce with the same workload as in 2023. In order to maintain the same workforce as in 2023, 2,321 new FTEs (44%) will be needed by 2033.

**Modelling the future demand for generalists**

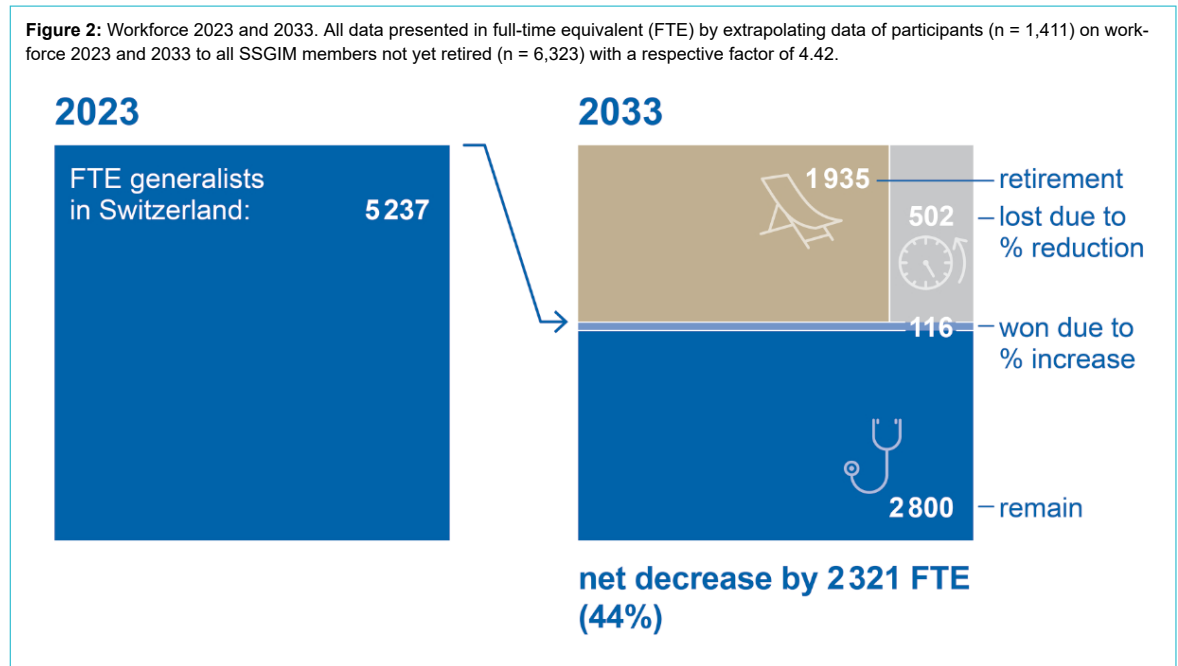
With the gap of 2,321 FTE by 2033, from figure 2, we modelled this gap for better interpretation on a yearly basis according to different scenarios stratified into the selected factors influencing the number of generalists needed by 2033 (tables 3 and 4).

**Interest among students during medical education**

In 2022, about 1,200 medical students graduated in Switzerland [11], and about 30% of all board certifications were in general internal medicine [12], but, according to a new survey among medical students in Switzerland, 47% are interested in becoming generalists [13]. As shown in table 3, we modelled the number of new FTE per year with interests of 20%, 30% and 50% in combination with different workloads such as 60%, 70% and 80%. This results in 252 new FTE per year (range 144 to 480).

**During residency**

We continue with the estimated 252 new FTE per year and model influx from abroad as well as dropouts. In 2022, 1,420 board certifications from outside Switzerland have been accepted of which 134 (9.4%) are in general internal medicine [12]. An earlier study indicates that about 14% of all students who graduate in Switzerland will not actually work in the field (dropouts) [10]. We therefore modelled an influx of generalists as 0%, 10% and 20% as well



**Table 3:**

Modelling enablers and barriers towards filling the gap in generalists by 2033. FTEs of new generalists per year needed according to interest to become generalists and workload scenarios. Illustrative interpretation of the table: In 2022, 1,200 medical students graduated [11]; if 30% of them became generalists (as in 2022), working at an employment level of 80%, this would generate 288 FTEs of new generalists per year.

		Interest to become generalists		
		20%	30%	50%
Workload scenarios	60%	144	216	360
	70%	168	252	420
	80%	192	288	480

**Table 4:**

Modelling enablers and barriers towards filling the gap in generalists by 2033. FTEs of new generalists per year available needed according to board examinations of residents from abroad and dropout scenarios. Illustrative interpretation of the table: In table 3, 252 new FTEs are expected to pass the Swiss board examination. If an additional 10% board-certified residents are expected to come to Switzerland from abroad, then, under the assumption of 15% dropouts, 236 additional new generalist FTEs would be available.

		Board examinations of residents from abroad		
		0%	10%	20%
Dropout scenarios	10%	227	249	272
	15%	214	236	257
	20%	202	222	242

as dropouts of 10%, 15% and 20%. This results in 236 new FTE per year (range 202 to 272)

### Other factors

*Early retirement:* In our sample, 47 of 542 (9%) of all those who want to retire by 2033 are under age 55 at the time of this survey. This translates to 181 FTE lost by 2033 due to early retirement.

*Change of population:* By 2033, almost one million (+9.3%) more persons will live in Switzerland [14]. Therefore, our models could also be increased by +10% to account for this population growth.

### Discussion

The current workforce in general internal medicine will decrease by about 44% from 2023 to 2033 in Switzerland. The large number of almost 40% retirements is the main driver for the decrease while another 30% plan to decrease their workload; 20% plan to keep their workload and 10% intend to increase it. From now until 2033, the workforce of generalists in Switzerland will decrease by about 2,321 FTE. This gap needs to be filled by a new generation of generalists who will be trained mostly in Switzerland. Various factors influence the assumptions under which Switzerland will maintain its current workforce: interest, dropouts, influx from abroad and workload, in addition to early retirements and a growing and ageing population. Switzerland will struggle to close the gap; more efforts are needed to increase the workforce of generalists and to retain the workforce until their retirement.

### Context

Our findings agree with others that call for action for the future workforce of healthcare providers, specifically physicians [15–17]. Although we did not focus on the effects of the COVID-19 pandemic on the workforce, it should be noted that the pandemic's long-term impact on health care is still largely unknown, but its toll on mental health, demoralisation and the wish to leave the profession should increase efforts to protect the workforce [18]. It should be noted that there are also domains and settings where a surplus rather than a lack is expected, such as emergency physicians in the US [19]. Workforce studies using surveys are subject to selection bias. However, official registries can significantly overestimate the healthcare workforce [8, 20] because the registries are not updated, the workload is not known or the future planned workforce is not reported. Many factors influence the development of the workforce, and we have tried to integrate some of them into our scenarios based on interest, workload, dropouts, influx from abroad, early retirement and population growth. We acknowledge that those factors are impacted not solely by decisions from the political decision-makers but also by how the professionals themselves position general internal medicine in the future. Sharpening the profile and acknowledging the broad field in which generalists work are key elements for general internal medicine to be considered and chosen as a career speciality [21].

### Limitations and strengths

We acknowledge several limitations in our study. 1) It is a cross-sectional study with a 33% participation rate from members of SSGIM including residents that chose membership, and possibly it does not capture the workforce of all current residents in general internal medicine. In addition, 26% of all respondents did not report their current or future workforce. However, since Switzerland lacks a trustworthy registry to assess the generalist (and residents) workforce, their FTE and their planned workforce, this design is the next best choice. Several reviews have concluded that such response rates in a survey of physicians do not introduce selection bias [22,23]. The characteristics of gender and age across study participants and non-participating SSGIM members are similar; thus generalisation can be assumed but not proven. 2) We asked generalists to predict their workload plans, which may differ from actual events. 3) When assessing future needs, several factors interact, and only the future will demonstrate which factors have the largest effect. Hence, expert opinions [24] form a basis for selecting those factors, as in this paper. Our choice to transparently mention all assumptions, their basis and their variance will help the reader to select the most realistic scenario and calculate the expected demand. To our knowledge, this is the first study to assess the workforce of generalists incorporating FTE instead of counting persons and focusing on generalists in contrast to all physicians or general practitioners (GP) specifically.

### Implications

On the national level, the Swiss “*numerus clausus*”, currently applied due to capacity constraints at many universities, needs to be cautiously re-evaluated, with increased placements for bachelor and master students. In addition, we consider it necessary to evaluate an increase in capacity to train future generalists not only at universities but also later in hospitals and in general practice. Generalists themselves can help close the gap by promoting this interesting profession with a close connection to people and a very broad field of activity [25]. However, we acknowledge that shortage of healthcare professionals is a universal problem and that a solution needs not only an increase in FTE of generalists but also 1) better interprofessional collaboration with nurse practitioners, physician assistants, pharmacists and others, 2) a re-focus on patient care and resistance against the increase in unnecessary administrative work, 3) high-quality training opportunities for future generalists including mentoring and strengthening of resilience skills, 4) fostering digital transformation to allow generalists to work more efficiently with focus on patient care.

### Conclusion

Switzerland's workforce of generalists will dramatically decrease by 44% within 10 years. The main driver is retirement, followed by planned workload reductions. The need to fill this gap depends on various factors, including attracting more generalists, workload, dropouts, influx from abroad, retirement and population growth. Based on this study, policymakers, universities, healthcare institutions and professionals themselves should invest in attractive job options and career plans for generalists to fill the gap.

## Availability of data and materials

The data used and analysed in this study may be made available upon reasonable request.

## Acknowledgments

We thank all members of SSGIM for their participation and the SSGIM secretariat for their support to distribute the survey and Dr. Kristie Weir and Renata Vidonscky Lüthold for her editorial assistance.

## Financial disclosure

The study did not receive any funding.

## Potential competing interests

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflict of interest related to the content of this manuscript was disclosed.

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## Appendix

**Table S1:**

Comparison of participants and all SGAIM members.

Characteristics		Participants	All SGAIM members
Number		1411	6232
Female gender		46.6%	46.9%
Age category	Under 45 years	36.5%	35.1%
	46–55 years	22.7%	26.1%
	Over 55 years	42.7%	38.8%

<sup>1</sup> All participants with full data on their workforce 2023 and 2023 (n = 513 excluded)<sup>2</sup> As described in the study flowchart, all retired SGAIM members (n = 1,904) were excluded