

# Final Report

## from the Spending Review Pilot Project in the Czech Republic

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<sup>1</sup> Supporting documentation and observations on behalf of the Ministry of Health were provided by Olga Laaksonen, Head of the Department of Science, Research and Education Subsidies

## 1 Introduction

For the Spending Review pilot project in the Czech Republic, a medical residency subsidy programme was selected that is covered by the Ministry of Health (MoH) heading of the state budget. This programme was selected for the following reasons:

- (a) Highly dynamic expenditure in both absolute and relative terms
- (b) The MoH's rising demands asking for state budget expenditure on this programme to be increased
- (c) The results of an audit by the Supreme Audit Office<sup>2</sup>

How do residency subsidies work? Medical graduates cannot practise medicine independently and unsupervised after graduation. In order to work independently, they must undergo specialised postgraduate training with a health service provider (e.g. a hospital, a general practitioner's surgery, etc.). At the end of this specialised training, they take a postgraduate certification examination. Residency subsidies are granted to health service providers. Most of the subsidy (at least 55 %) must be paid to the trainee. The remainder of the subsidy is used to cover the training costs incurred by the health facility. One subsidy recipient may have multiple trainees.

A subsidy is granted on the basis of Act No 95/2004 on conditions for the acquisition and recognition of professional competence and specialised competence to pursue the medical profession of doctor, dentist and pharmacist. A subsidy is provided either for complete specialised training (twice a year) or only for the initial part of the training, i.e. the core curriculum (once a year). How long it takes to finish the complete specialised training, including the core curriculum, depends on the specific discipline, and usually ranges from four to five years, with the shortest training programme lasting 36 months and the longest 77 months.

The Final Report is structured as follows: the second section addresses how the available data is handled, organised and analysed. The third section examines efficiency, comparing expenditures, outputs, and benefits, or outcomes under the residency programme. The fourth section takes a closer look at the effectiveness of the programme in meeting its objectives. The fifth and final section presents recommendations for health and economic policy makers. The appendix leaves room for comments to be made to the Ministry of Health.

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<sup>2</sup> [Audit 19/06 | Supreme Audit Office \(nku.cz\)](https://www.nku.cz)

## 2 Data analysis

The authors of the study used data from a number of different sources. It should be pointed out that the various original sources (owners) had gathered and monitored the data for a variety of reasons.

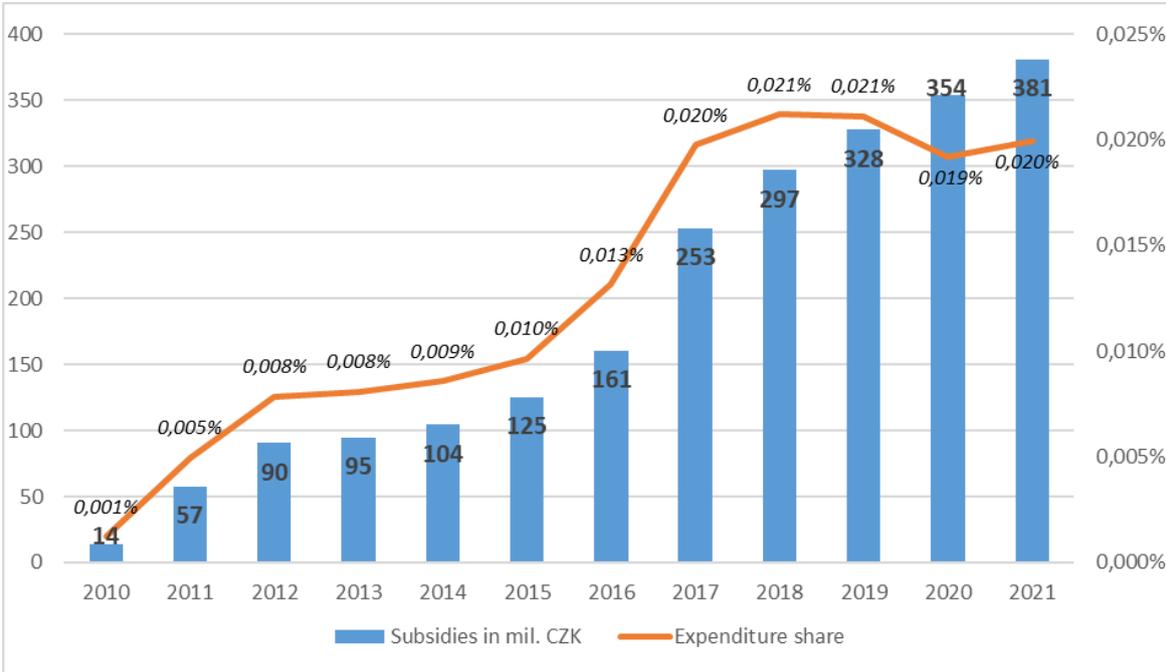
Although specialised training and health service provision overlap with each other, and although the two systems are interdependent, they are not one and the same. Specialised training is conducted in the pursuit of the medical profession of doctor and hence within the system of health service provision. However, the healthcare system is much broader and in some cases is completely disconnected from specialised training (e.g. the provision of care at outpatient clinics that specialise in certain fields and have no interest or need to employ young doctors preparing for postgraduate examinations). By no means all health service providers, whether outpatient or inpatient, are accredited to offer specialised training. Nevertheless, information about them feeds into this analysis via data from health insurance funds. This fact should be borne in mind when forming any conclusions.

### 2.1 Expenditure

#### 2.1.1 Expenditure in general

We will start by looking at the expenditure side. Expenditure on medical residency subsidies increased exponentially over the reporting period (2010-2021). Growth can be observed not only in absolute terms in Chart 1, but also as a proportion of total state budget expenditure (the “Expenditure share” curve). The upward trend in relative terms was briefly interrupted in 2020 by a sharp increase in state budget expenditure linked to the COVID-19 pandemic.

Chart 1 – Trend in state budget expenditure on residency subsidies



The total amounts disbursed may also be correlated to the number of disciplines involved in the programmes (Chart 2) or to the number of providers involved (subsidy recipients – Chart 3). In both cases a long-term upward trend is apparent.

Chart 2 – Trend in residency subsidy expenditure per discipline involved (CZK thousands)

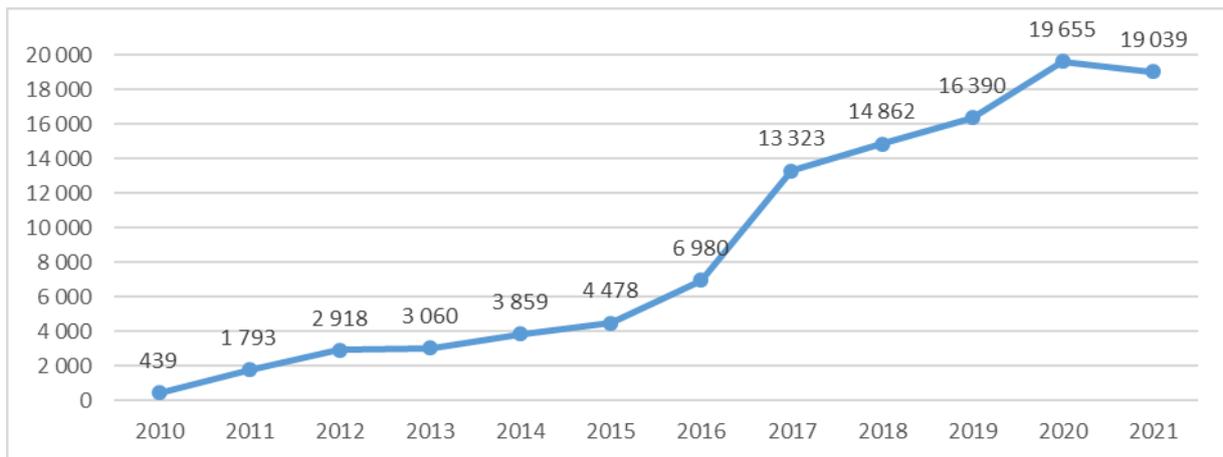
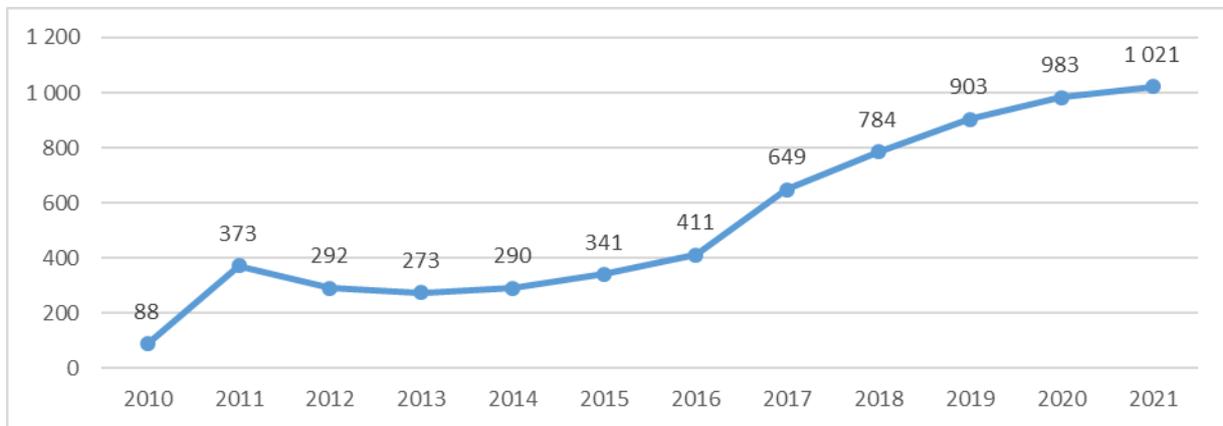


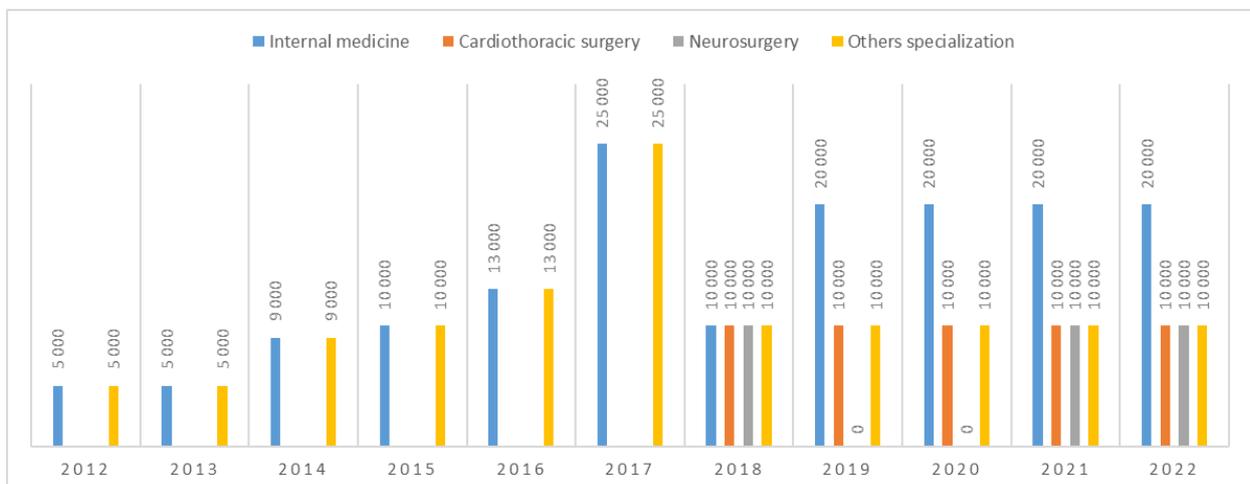
Chart 3 – Trend in residency subsidy expenditure per provider involved (CZK thousands)



### 2.1.2 Expenditure per residency

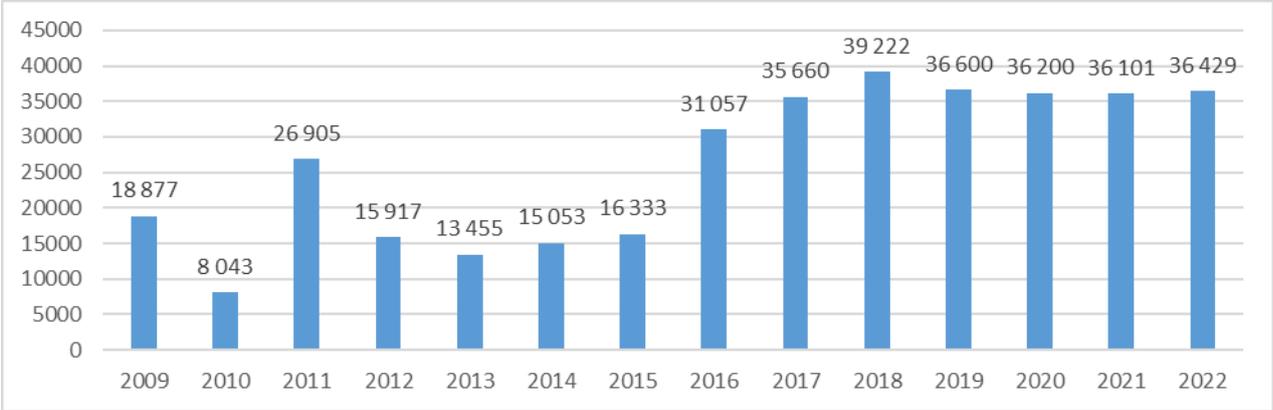
This subsection covers the trend in rates per residency in monetary terms. Here, subsidies need to be broken down into subsidies covering trainees’ core curriculum only and those covering trainees’ complete specialised training, which also includes the core curriculum. Core curriculum subsidies were introduced in 2012.

Chart 4 – Trend in the monthly subsidy for selected core curricula



The monthly rates shown below are a recalculation of the officially set annual amount of a subsidy. We have converted them to monthly amounts in order to provide a more meaningful comparison with core curriculum subsidies. This is the average across all disciplines.

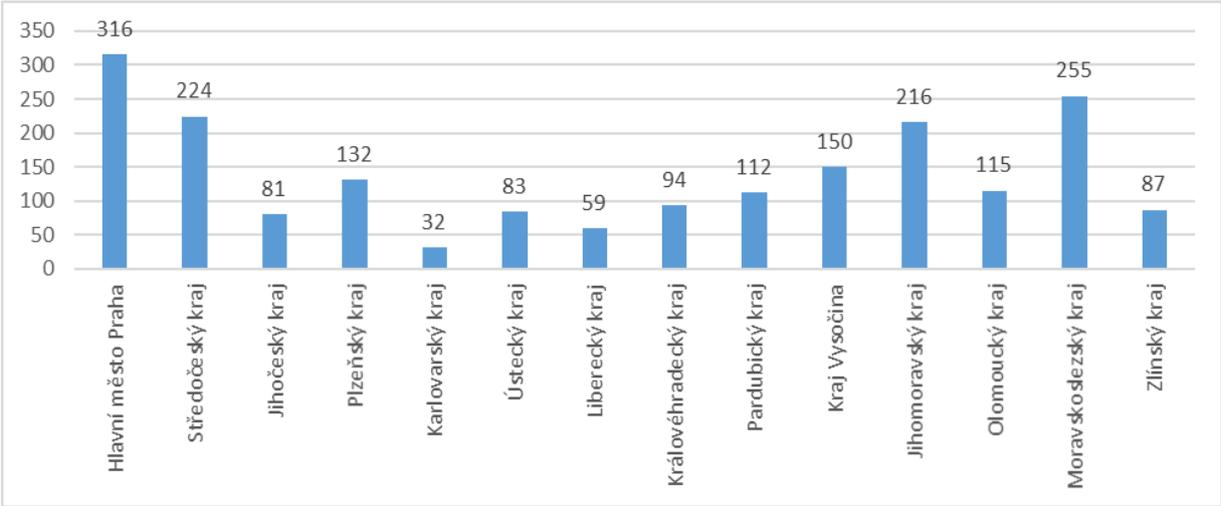
Chart 5 – Trend in the average monthly rate of the subsidy per resident – complete specialised training



**2.1.3 Expenditure – geographical dimension**

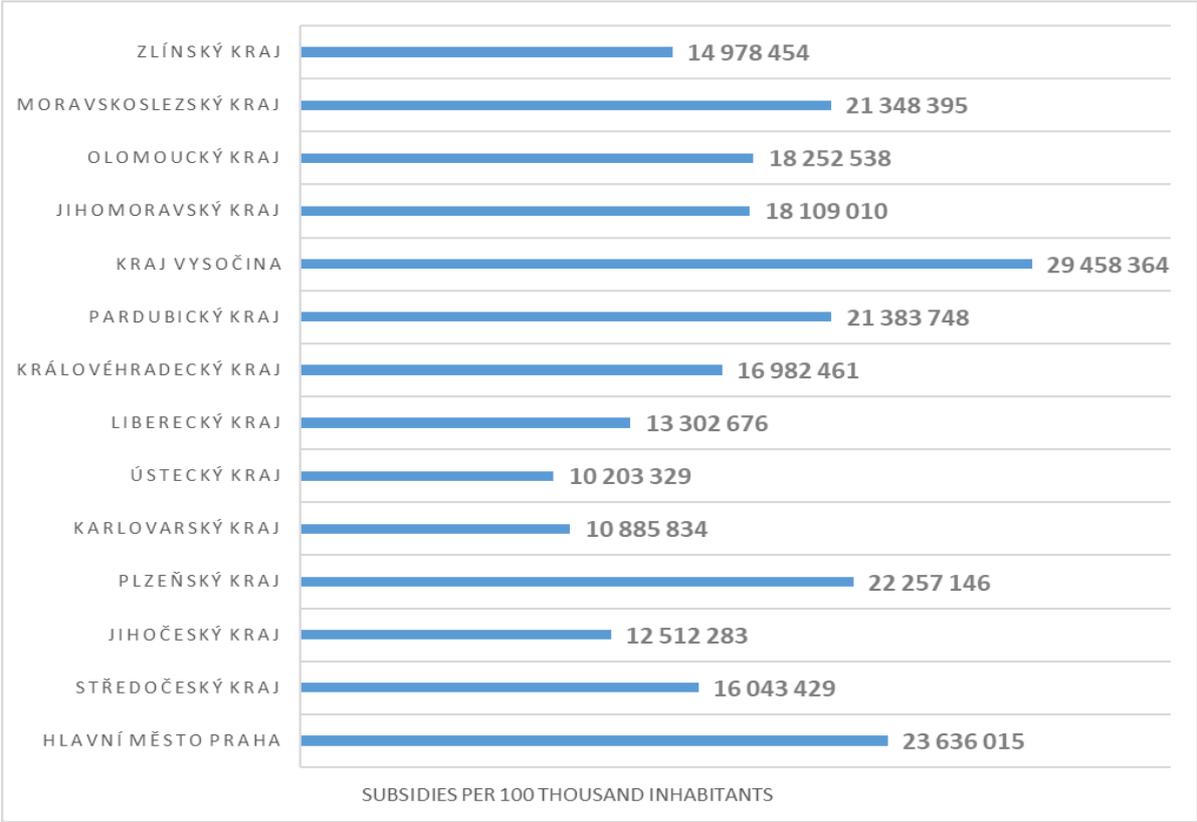
A residency programme can be viewed from two dimensions, geographical and disciplinary. These dimensions will be put to use primarily in Section 3, which deals with efficiency. In this section, we will present state budget expenditure according to both dimensions, starting with the regional dimension. Chart 6 shows the distribution of the total amount of subsidies for each year for health service providers in each region of the country:

Chart 6 – Total subsidies disbursed in 2010-2020 (CZK millions) by region



Naturally, regions vary in size, so a relative scale also needs to be employed. In Chart 7, subsidies are presented relative to population size. Using this scale, health service providers operating in the Vysočina Region received the most money in relative terms. It is worth noting that providers in Prague received the highest amount of subsidies in absolute terms, but in relative terms they ranked second. The smallest region, Karlovy Vary, is last in absolute amounts and second to last in relative amounts.

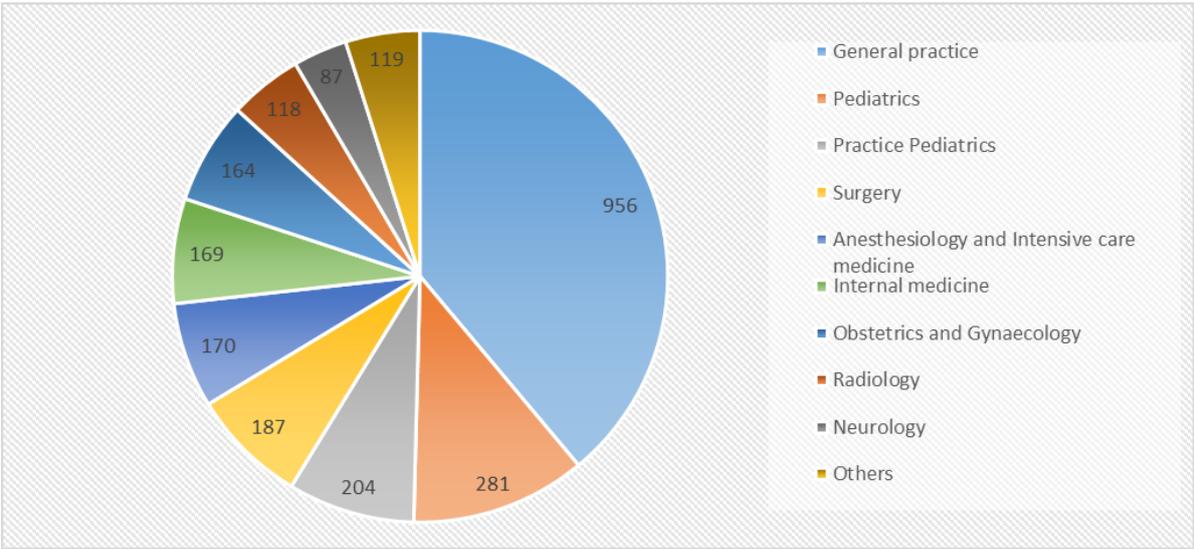
Chart 7 – Subsidy amount relative to average population by region (CZK)



**2.1.4 Expenditure – disciplinary dimension**

Similarly, the distribution of subsidies by medical discipline can be shown. Chart 8 shows that most funding is directed at primary care, mainly general practitioners and paediatric general practitioners.

Chart 8<sup>3</sup> – Total subsidies disbursed in 2010-2020 (CZK millions) by discipline

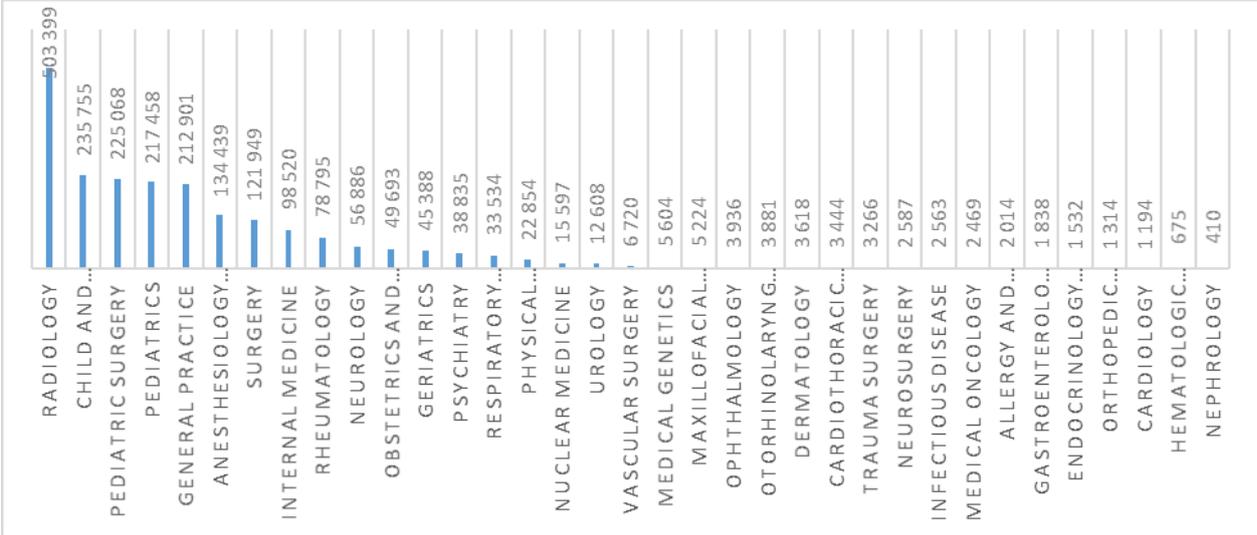


<sup>3</sup> In 2017, the fields of “general medicine for children and adolescents” and “child medicine” were merged into “paediatrics”

Residency programme expenditure can also hypothetically be expressed relative to the number of jobs (FTE) by discipline in the Czech Republic. This is not directly a subsidy per FTE, but the amount paid over the entire period examined, divided by the average number of FTEs already in existence for doctors who were able to practise unsupervised and were not trainees. Theoretically, this could be interpreted as the relative “success” of each discipline in securing residency subsidies.

However, such a perspective may be distorted by the fact that disciplines that are more “hospital-based”, i.e. where care is typically provided in an inpatient setting, or laboratory and complement disciplines, will have fewer FTEs than disciplines where a single physician may work for both an inpatient and an outpatient care provider (e.g. via his or her own practice). Examples include radiology, paediatric surgery or anaesthesiology, and intensive care medicine. In these disciplines, the numbers of FTEs are more likely to be equal to the number of individuals practising as doctors. In disciplines where doctors are more likely to work for more than one healthcare provider, it is difficult to ascertain how many individuals actually make up the number of FTEs contracted with insurers.

Chart 9 – Hypothetical subsidy amount relative to the number of FTEs in the discipline (CZK)



**2.1.5 Expenditure of health insurance funds**

Health insurance funds pay training incentive compensation to general practitioners, paediatric general practitioners and in outpatient gynaecology. The authors of the study are in possession of data from a public administration audit conducted by the Ministry of Health and the Ministry of Finance called “Ensuring the local and temporal availability of covered services, incentive compensation” for all health insurance funds over the 2014-2018 period.

The health insurance funds covered the training itself (i.e. doctors kept records of trainees in a given year) and incentivised the “ability” to train. Providers received extra money from insurance funds if they were accredited by the Ministry of Health. The amounts expended for these purposes are summarised in Table 1.

Table 1 – Expenditure on health insurance funds’ incentive compensation for training in primary care

Indicator/year	2014	2015	2016	2017	2018
Number of health service providers – accreditation	1,178	1,039	1,077	1,123	1,110
Number of health service providers – trainer	402	374	371	370	352
Ratio of number of health service providers: trainer/accreditation	34,13%	36,00%	34,45%	32,95%	31,71%
Accreditation cost (CZK thousands)	37,952	36,044	38,095	40,069	33,481
Trainer cost (CZK thousands)	32,266	34,062	39,232	42,814	40,978
Cost ratio: trainer/accreditation	85%	95%	103%	107%	122%

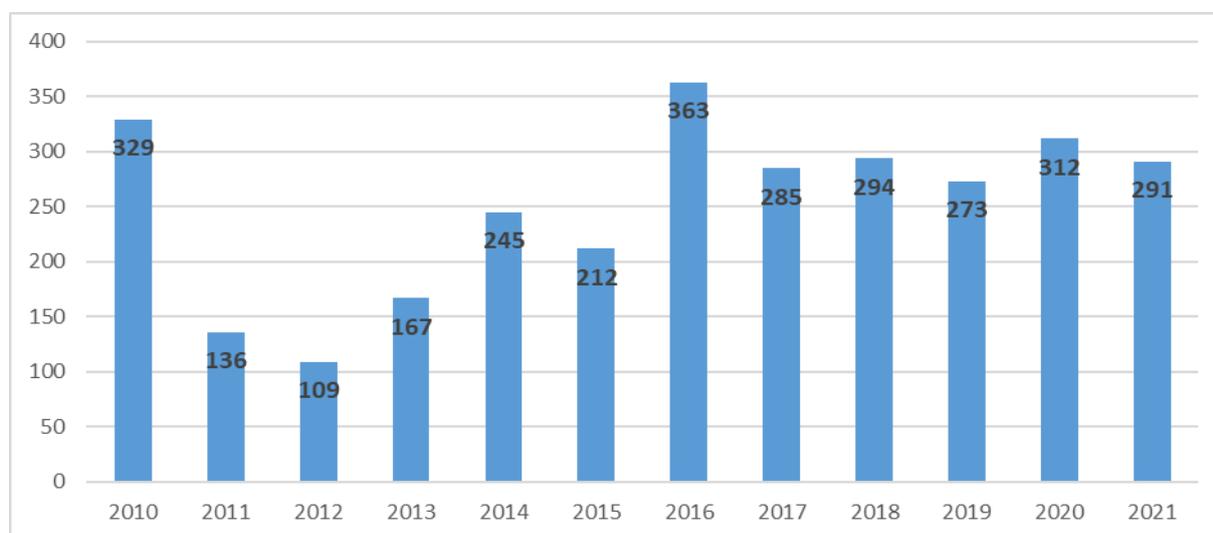
It can be concluded that the funding of one and the same activity was and still is partially duplicated. “Partially” because most of the state budget subsidy has to be used for the trainee’s remuneration, whereas compensation from the insurance fund is the trainer’s income, without there being any stipulation as to what the trainer has to spend it on. Nevertheless, since health insurance funds operate somewhat autonomously and independently of the Ministry of Health, it may be difficult to resolve these duplications.

## 2.2 Outputs

In contrast to subsection 2.1, where we have ample data to describe and analyse the expenditure side, the situation is worse when it comes to outputs, benefits and outcomes. Naturally, measuring them is inherently more difficult than in the case of inputs or funds.

Unfortunately, we do not currently know how many residents were subsidised throughout the period under review. The MoH stopped tracking them statistically in 2013. Chart 10 therefore draws on estimates derived from the funds spent in each speciality and from the monthly or, where appropriate, annual rates. The figures are expressed as the full-year equivalent of one resident, e.g. if a subsidy recipient trained two residents, one in the period from January to June of year X and the other in the period from July to December of the same year, then together they add up to 1:

Chart 10 – Trend in the number of residents (2010-2013) and estimate of the number of residents (2014-2021)



We tested the accuracy of our estimates using actual data for the 2010-2013 period and found that the variance was low:

Table 2 – Comparison of the estimated and actual number of residents

	2010	2011	2012	2013
MoH	326	140	116	180
Estimate	329	136	109	167
Variance	1%	-3%	-6%	-8%

Nor does the MoH monitor the success rate in completing postgraduate training. Consequently, there is no data on how many or what percentage of the subsidised places actually resulted in a doctor being able to practise unsupervised. Further, the MoH does not systematically track<sup>4</sup> data on trainees whose trainers do not receive residency subsidies.

For the reasons outlined above, our analysis also considers other output data that is more readily available, such as the number of healthcare providers that were awarded subsidies. We note that the number of residents cannot be inferred from this data because one provider may train multiple residents.

Chart 11 – Trend in the number of residency subsidy recipients

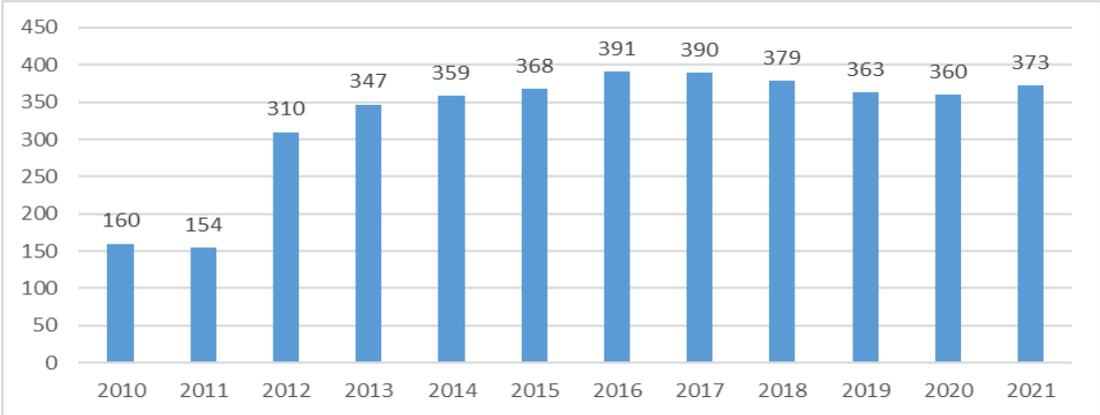


Chart 11 shows that the number of subsidy recipients increased sharply in 2012, and has since fluctuated between 310 and 391. Knowing how total expenditure trended after 2012, it is clear that the increase was not driven by a rise in the number of subsidy recipients.

The time constraints of this study prevented a detailed analysis of subsidy recipients. However, the authors did investigate whether any of the large hospitals<sup>5</sup> established by the MoH were not participating in the residency subsidy programme. According to MoH data, only one of them – Na

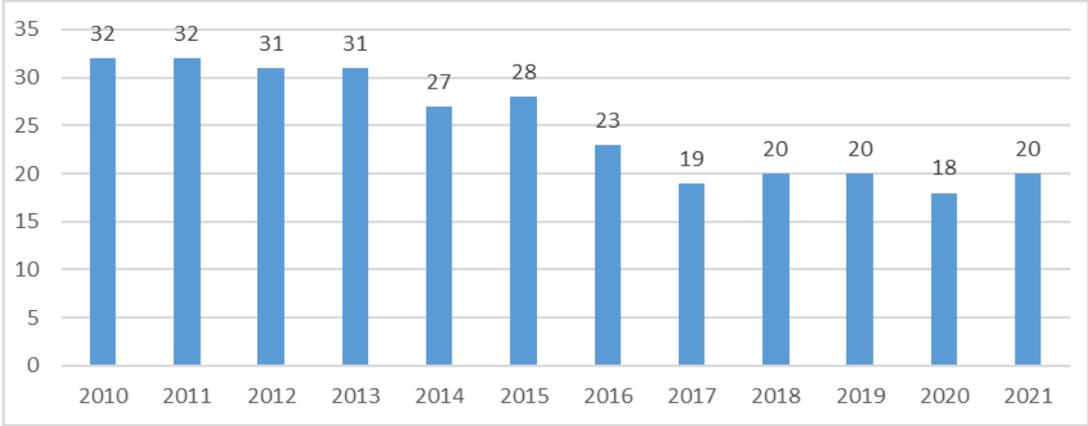
<sup>4</sup> In 2022, the MoH conducted an ad hoc survey of paediatrics which showed that only 34% of the doctors in training were covered by a residency subsidy.

<sup>5</sup> Hospitals with total revenues of more than CZK 1 billion in 2021.

Homolce Hospital – did not draw on subsidies in the reporting period. Among other hospitals, most of those operating in the former district seats also participated in the programme.<sup>6</sup>

The next chart shows the trend in the number of medical disciplines involved, which is on a downward trajectory:

Chart 12 – Trend in the number of medical disciplines receiving the subsidy in each year



It should be noted here that there is a high degree of variability across disciplines. For example, over the period as a whole, there were two disciplines where the subsidy was used for only one residency (e.g. vascular surgery) and another seven disciplines where it was used for only two residencies (e.g. neurosurgery). On the other hand, for six disciplines there were more than 100 subsidised residency places (in addition to the aforementioned primary care disciplines, these were surgery, internal medicine, anaesthesiology and intensive care medicine).

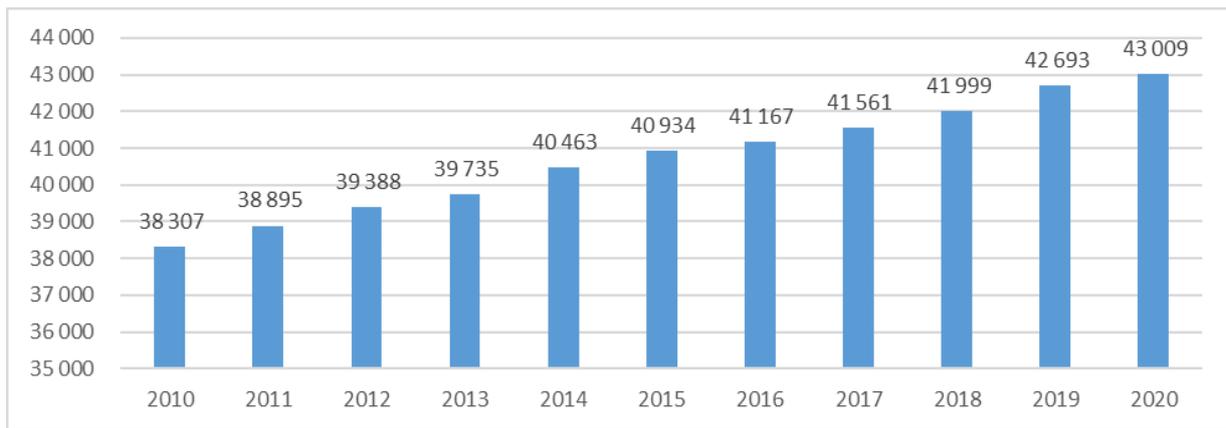
### 2.3 Outcomes and benefits

Insofar as residency subsidies are a tool<sup>7</sup> to secure a sufficient number of doctors, and thus the availability of health services, the first and comprehensive indicator here is the number of doctors in the Czech Republic. The number of FTEs is available over a longer time series, as shown in Chart 13.

<sup>6</sup> Although the use of the subsidy was not recorded, for example, at České Budějovice Hospital or Vsetín Hospital.

<sup>7</sup> The more important tools we could mention include the capacity of medical faculties, the level of remuneration of medical staff, the difference in compensation paid to medical staff in other countries, the different working conditions for doctors in the Czech Republic, etc.

Chart 13 – Trend in the number of full-time equivalent doctors in the Czech Republic



Data from the Institute of Health Information and Statistics also makes it possible to conduct a geographical analysis of the trend in the number of FTEs. Because of the timing of the Final Report, the analysis focused only on a regional level, although an analysis at a more detailed level, i.e. districts, would also be possible. Nevertheless, the interpretative value of such a more detailed analysis might not be much higher considering that catchment areas may overlap the territory of multiple districts. This phenomenon can also be observed with the regions (e.g. because the inhabitants of Central Bohemia commute to Prague), but it is less frequent.

Chart 15 shows that the relative number of FTEs increased in all regions of the Czech Republic during the period under review. If we combine the findings from Charts 14 and 15, it could be concluded that the number of FTEs increased in all regions, but so unevenly that the differences widened. In other words, the number of FTEs rose more where the number of FTEs was already above average.

Chart 14 – Trend in the number of FTEs in the regions (per 100,000 inhabitants)

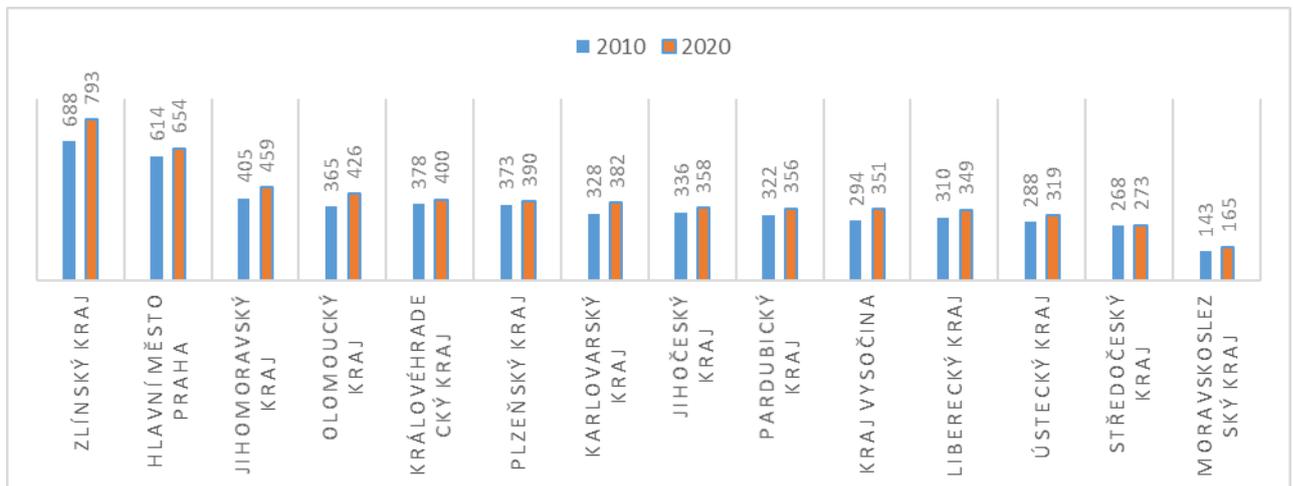
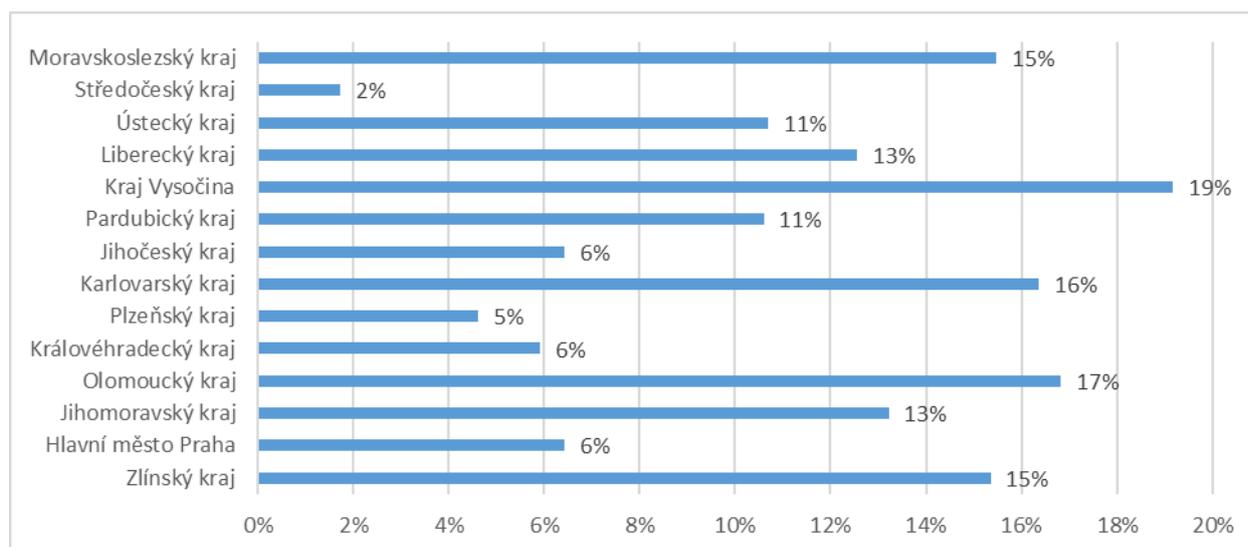


Chart 15 – Relative change in the number of FTEs in the regions



Data availability is worse from the disciplinary dimension. Here, the Institute of Health Information and Statistics does not have a consistent time series because there was a several-year gap in data collection in the middle of the last decade. The authors of the Final Report had to remedy this serious shortcoming by drawing on data from VZP ČR, the largest domestic health insurer. However, considering the purpose of our analysis, the data we retrieved poses two problems:

- 1) The data relates solely to VZP ČR, not to the six other health insurers.
- 2) VZP ČR tracks FTEs structured according to the disciplines of departments at contracted healthcare facilities.

The first problem does not constitute a significant distortion for our analysis because VZP ČR has the widest network<sup>8</sup> of health service providers of all health insurance funds. At the same time, there are not that many providers who do not have a contract with VZP ČR, but only with another insurance fund. Simply retrieving the contracted providers for all insurers is not possible, and examining each provider separately (there are tens of thousands of them) would exceed the time frame allotted to this Final Report.

A second issue may affect the outcomes of the analysis more significantly. Although VZP ČR's tracking of the above structure is correct, the comparability of the data within the framework of this Final Report is diminished. On the one hand, we have subsidies for individual disciplines per trainee, while on the other hand, we have the number of FTEs based on disciplines at individual departments; these are not the same categories. This is because a department specialising in a particular discipline (e.g. surgery) may have various specialists in various disciplines (e.g. anaesthetists) working for it. This discrepancy should be noted and the conclusions should be articulated with caution.

The following is a more detailed look at the disciplinary structure of FTEs and the trend in this structure over the reporting period (Chart 16). A 100% dynamic has been arbitrarily indicated in Chart 17 for a discipline that not existing from the beginning of the period under review, i.e. in the first year the number of FTEs in this discipline was 0. The same chart shows that the number of FTEs declined in five

<sup>8</sup> In its 2021 Annual Report, VZP ČR reports 41,622 contracted health service providers as at 31 December 2021. Of the total number of persons insured in the Czech Republic, 56.1% (taken as the average number for 2021) were clients of VZP ČR.

disciplines – otorhinolaryngology, occupational medicine, paediatric surgery, clinical pharmacology and thoracic surgery.

Chart 16 – Dynamics in the number of FTEs in individual disciplines

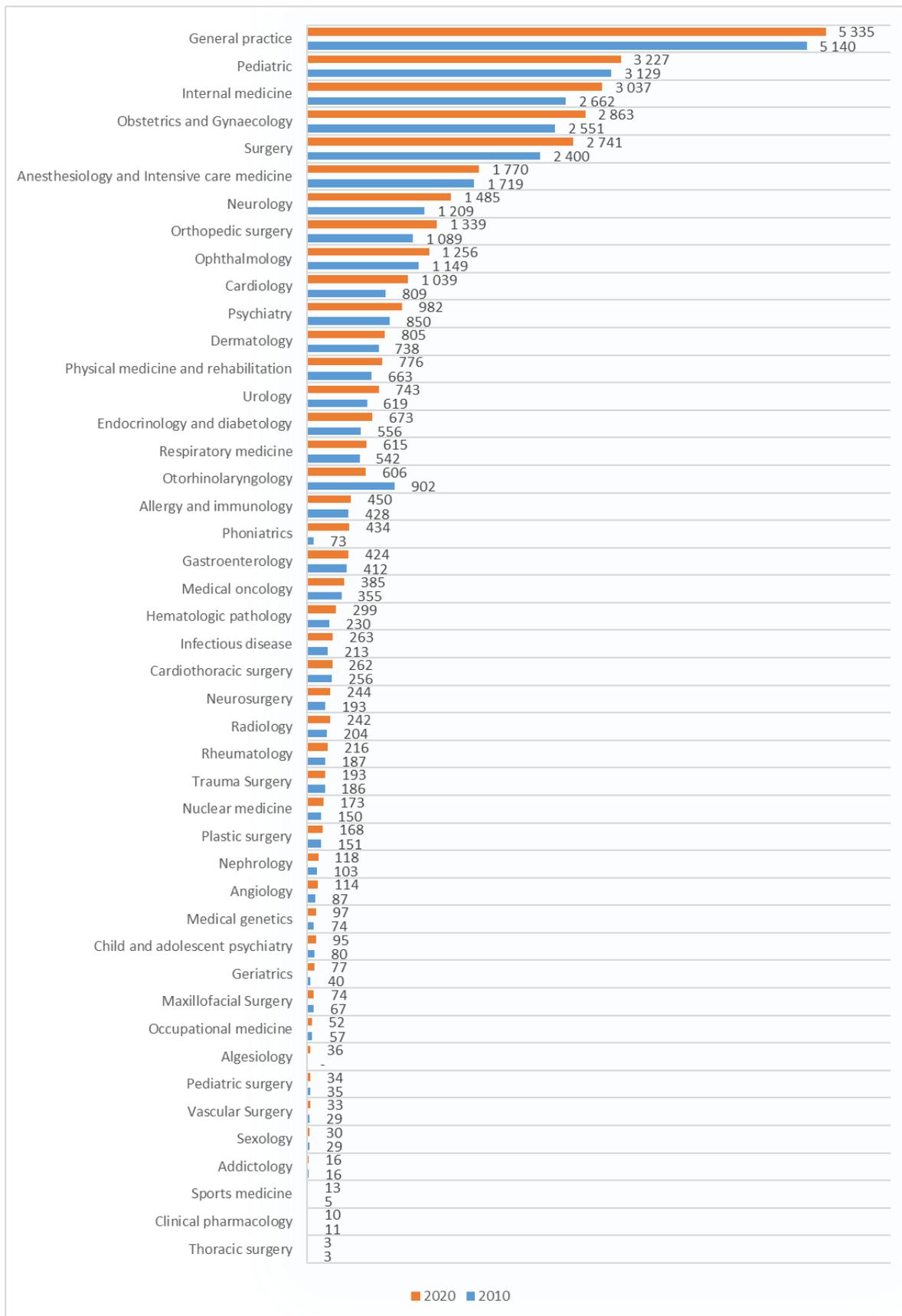
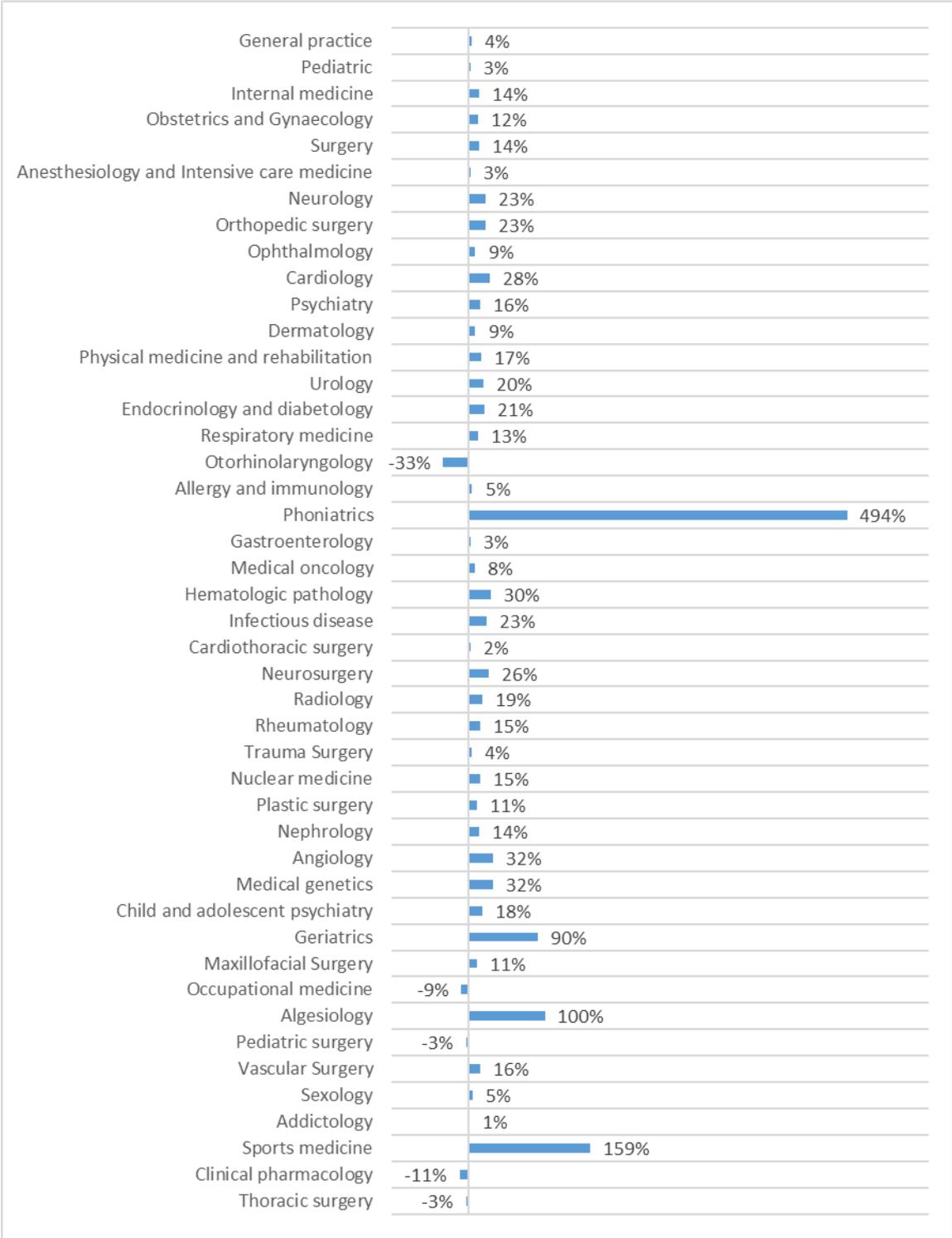


Chart 17 – Relative change in the number of FTEs in individual disciplines in 2010-2020



The VZP ČR data makes it possible to monitor the average age of doctors in the departments of a given specialisation from 2010. Chart 18 shows that in most cases the average age of doctors increased between 2010 and 2020. This information is important in terms of predicting future trends and may signal an impending shortage of doctors in the departments of a given discipline. The dynamics are illustrated more clearly in Chart 19.

Nevertheless, the data describing the trend in the age structure in individual disciplines must also be interpreted from the perspective that Act No 95/2004 was amended in 2017. That amendment abolished certain fields of specialisation, created other disciplines, and turned some specialisations into “extension disciplines”. Consequently, it is no longer possible to include new doctors in the core disciplines of, for example, general paediatric medicine or traumatology, a consideration which distorts their age structure.

Chart 18 – Average age of doctors in individual disciplines in 2010-2020

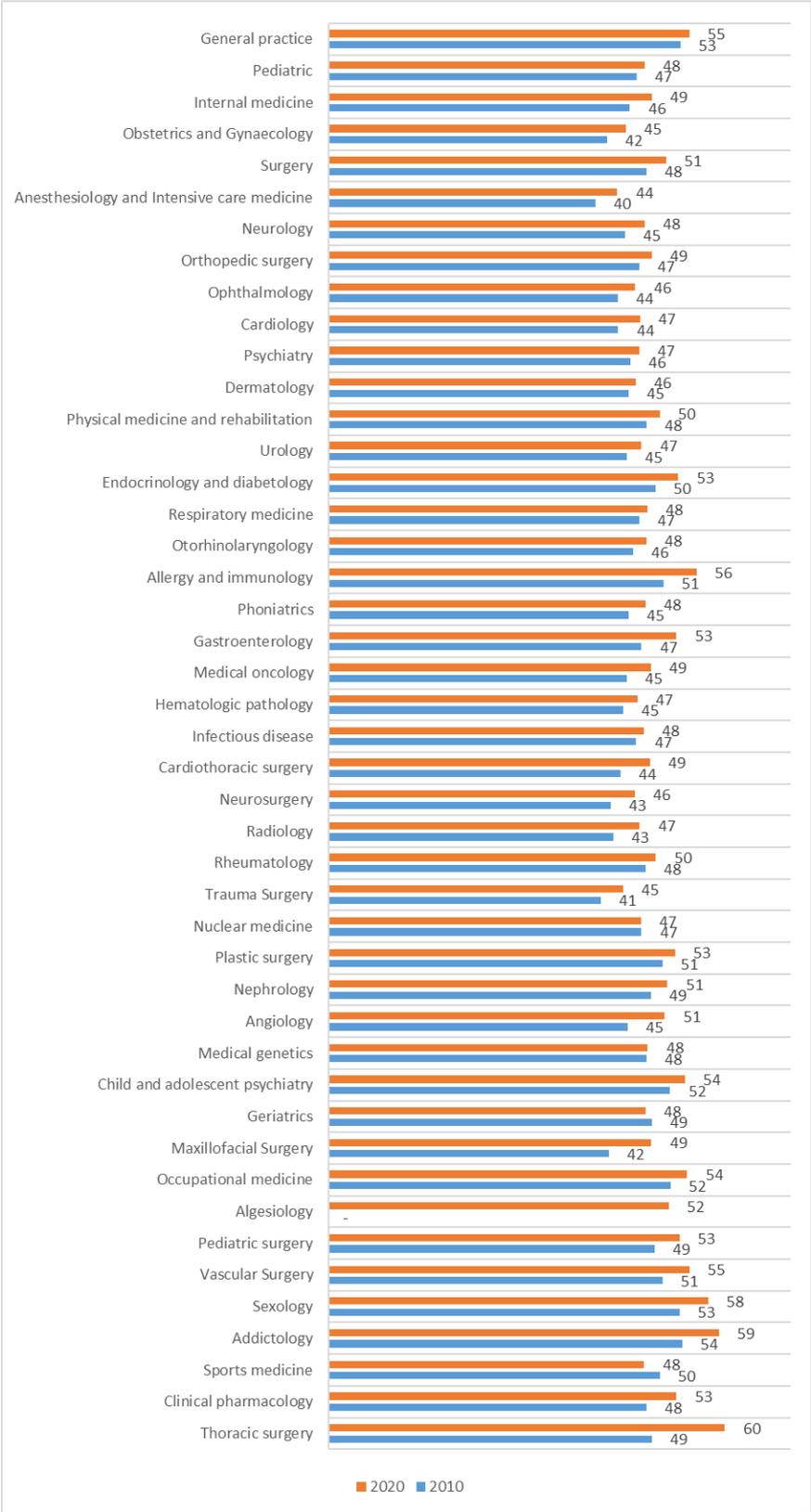


Chart 19 – Dynamics of the average age in individual disciplines in 2010-2020

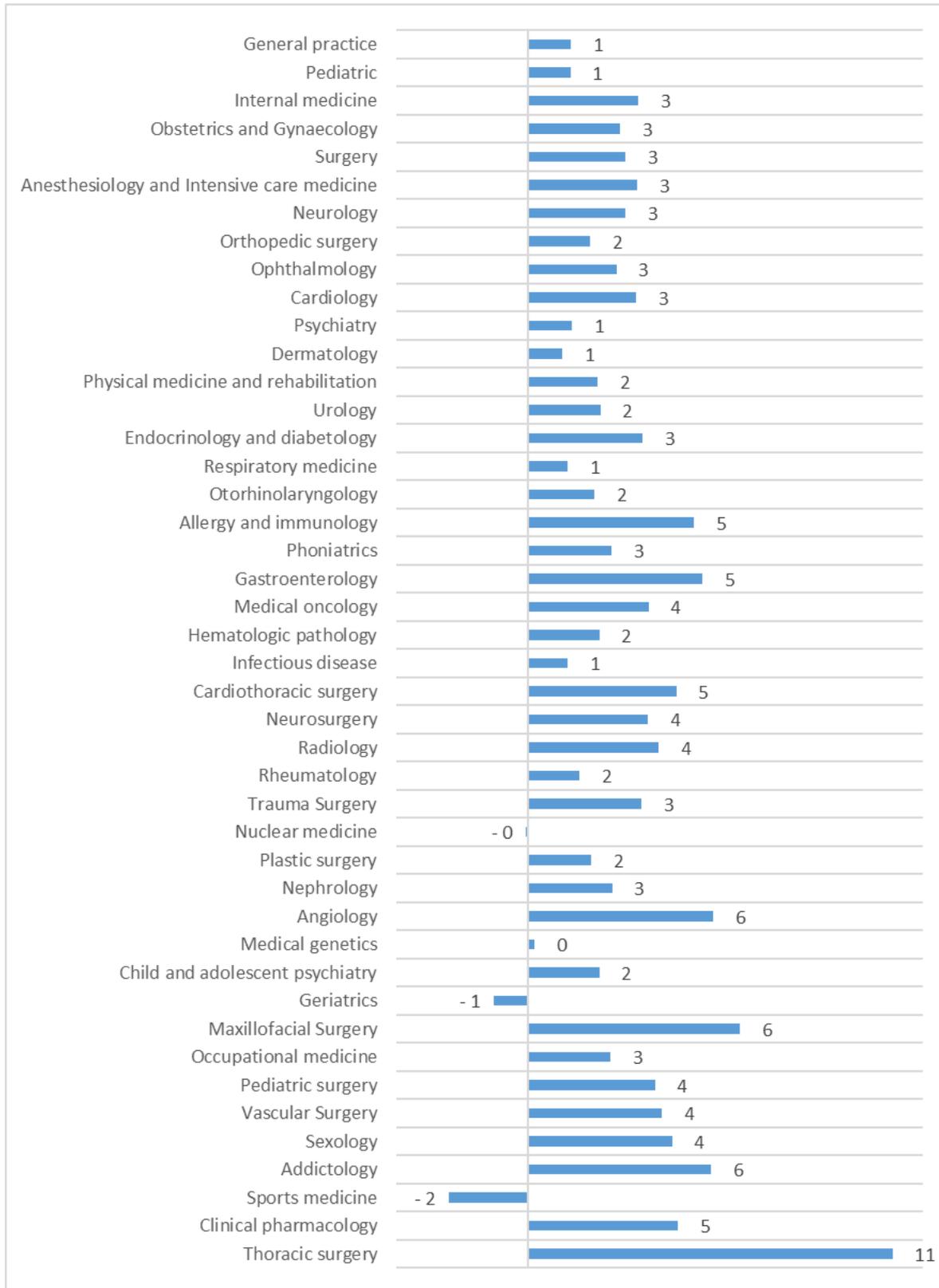
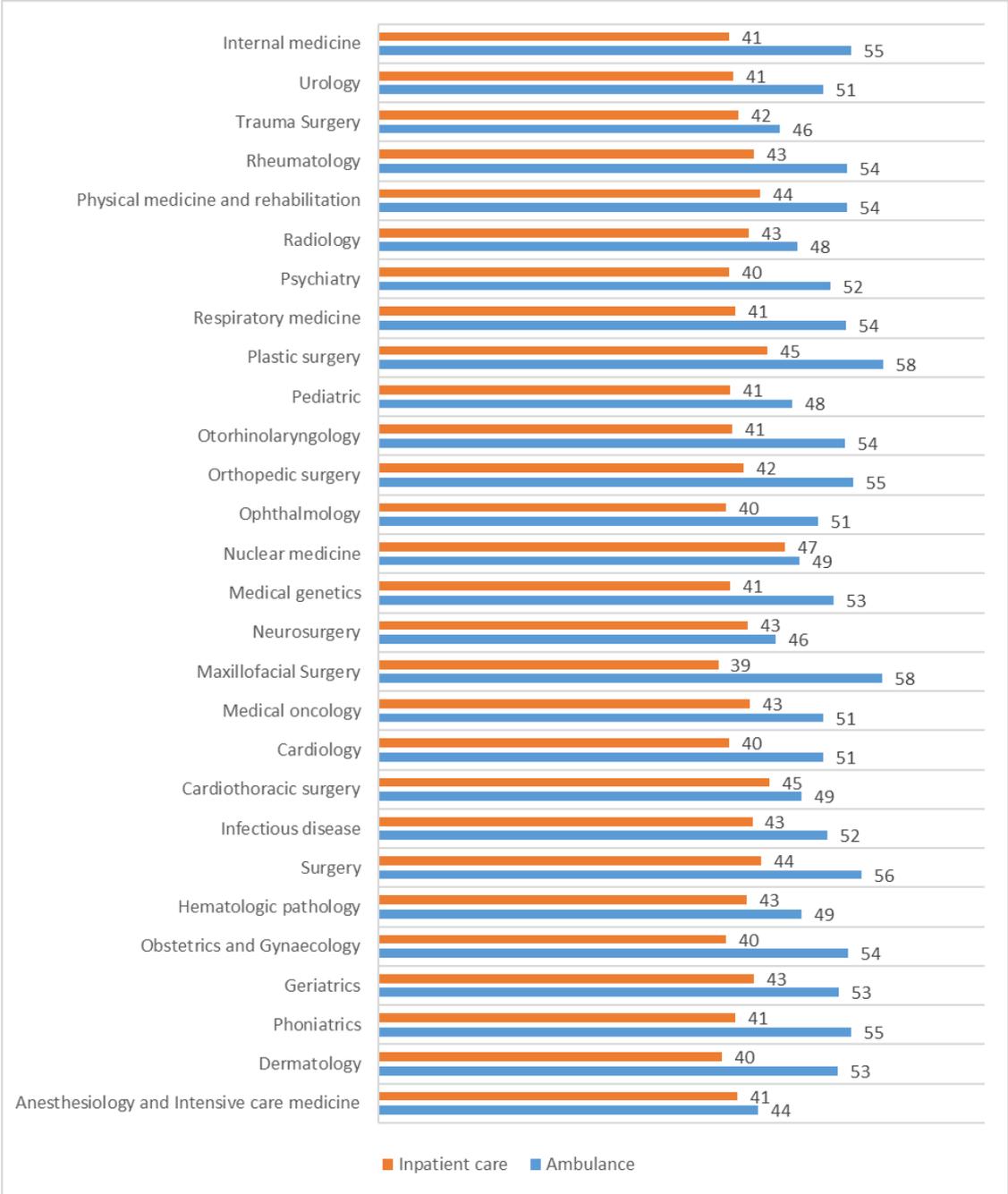


Chart 20 shows an interesting finding in the form of quite significant differences in average age between outpatient and inpatient staff. The differences vary across disciplines, but in all cases a higher average age is observed among doctors in outpatient departments.

This phenomenon is probably due to the fact that the vast majority of specialised training is carried out in inpatient settings and this is therefore where young graduate doctors start their professional career. Outpatient facilities are also largely set up by older doctors as their own private practices, i.e. these are doctors who have gained specialised competence, have sufficient experience to work independently and are exhausted by the demanding work required of inpatient facilities that operate around the clock.

Chart 20 – Average age in individual disciplines in 2010-2020



A comparison of the dynamics between the average age in inpatient (Chart 22) and outpatient care (Chart 21) reveals a clear difference. Whereas the vast majority of doctors in outpatient care are ageing, the overall trend in inpatient care is inconclusive, with a slight decrease in the average age in about half of the disciplines.

Chart 21 – Dynamics of the average age in outpatient care in 2010-2020

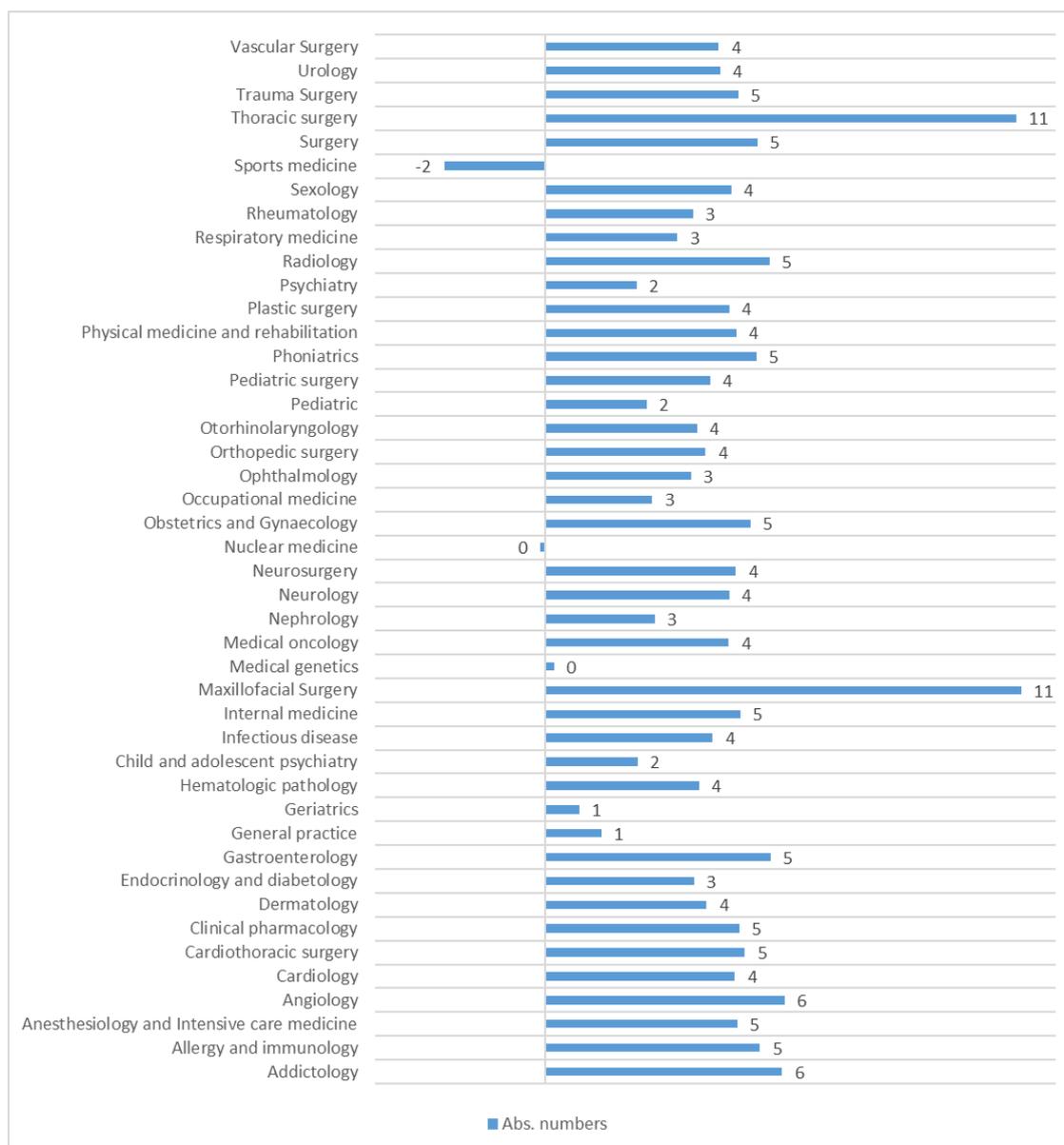
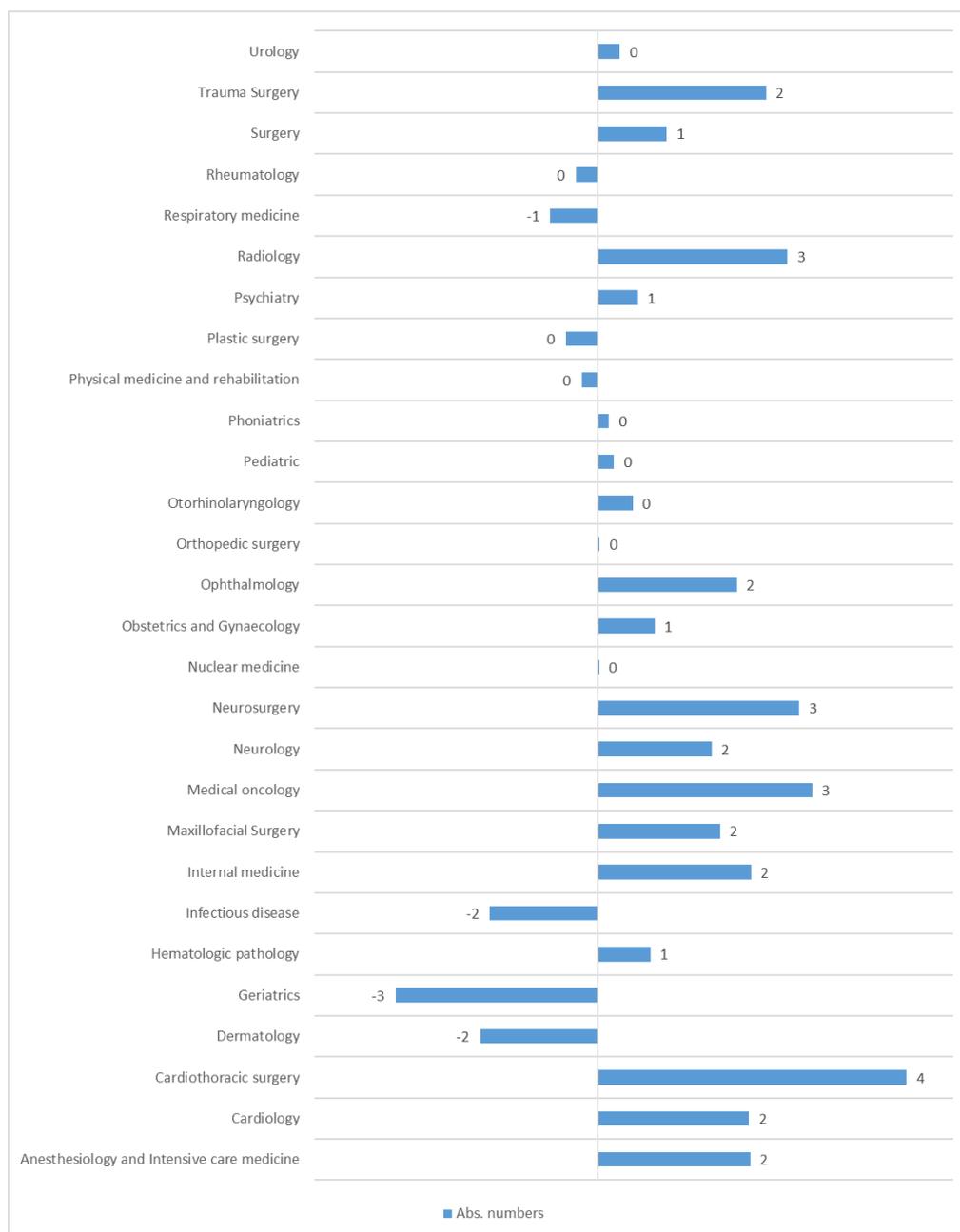


Chart 22 – Dynamics of the average age in inpatient care in 2010-2020



## 2.4 Conclusions from the data analysis

- A total of CZK 2.26 billion was spent on the residency programme between 2010 and 2021.
- Annual expenditure on residencies increased from CZK 14 million to CZK 381 million between 2010 and 2021.
- Annual expenditure on residencies as a proportion of total state budget expenditure increased approximately 16-fold over the above period.
- Most of the subsidy funding was directed at the primary care segment.
- Providers in the City of Prague received the highest amount in absolute terms (CZK 316 million).
- In relative terms per capita, the Vysočina Region received the most funds, with Prague second.

- In recent years, the number of (annualised) trainees has stagnated at around 300, and the number of subsidy recipients among health service providers at around 360.
- The number of medical disciplines involved has trended downwards from 32 to 20.
- The number of FTE doctors in the Czech Republic increased slowly but steadily in all regions between 2010 and 2020.
- The growth in the number of FTE doctors varied from region to region, with differences across regions widening.
- In the vast majority of disciplines, the number of FTE doctors rose over the same period.
- In the vast majority of disciplines, the average age of doctors rose between 2010 and 2020.
- The average age of doctors increased particularly in outpatient care, where it exceeded the age of doctors in inpatient care in all disciplines.

### 3 Efficiency

This section will compare the costs and outputs, or outcomes and benefits that we defined in Section 2. In this section, the authors of the Final Report **test the hypothesis that residency subsidies have no effect on the geographical or disciplinary structure of doctor FTEs, nor on the total number of FTEs.**

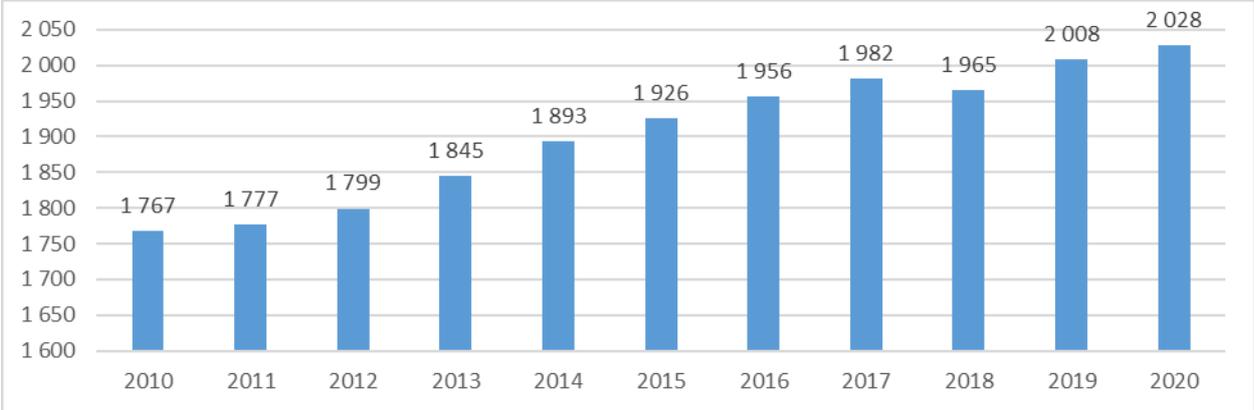
We formulated this hypothesis both with respect to the essentially non-existent prioritisation of how the subsidies are set and targeted, and in the knowledge that subsidy revenues account for a negligible share of health facility income. To put this in perspective, in 2021 health service providers’ revenues from health insurance funds amounted to CZK 409.7 billion. Therefore, expenditure on residencies in the same year accounted for less than one thousandth of that amount.

With regard to the trend in the total number of FTE doctors, as presented in section 2.3, the effect of residency subsidies is not apparent here. The upward trend is approximately the same both in the interval before the trainees in subsidised residencies could start practising independently and in the interval afterwards, when they could practise independently.

#### 3.1 Geographical dimension

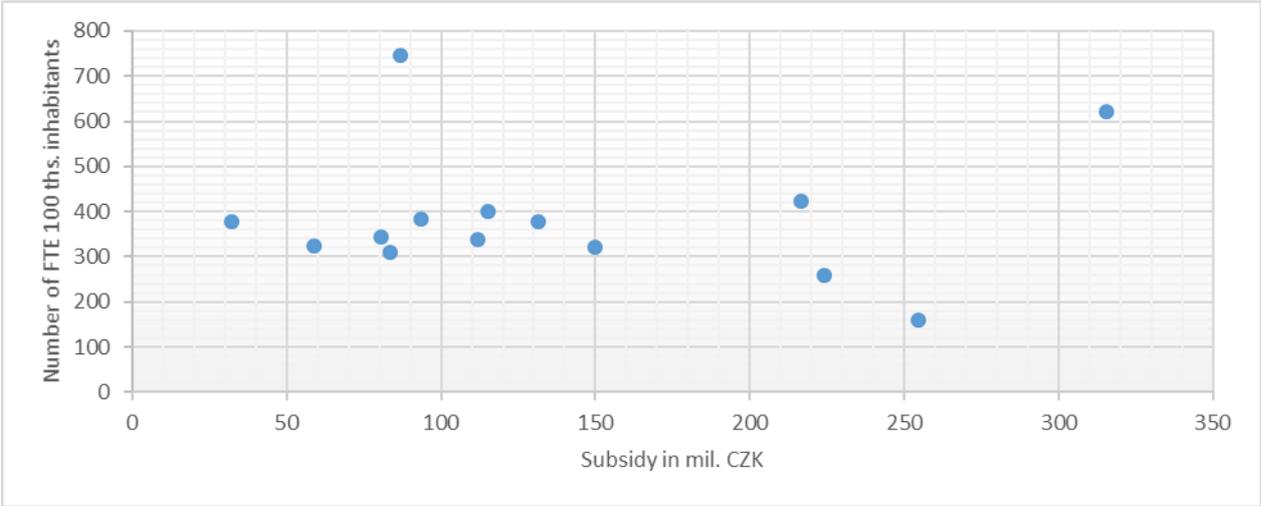
The authors of the study were interested in whether or not regional differences in the number of FTEs decreased during the period under review. An appropriate indicator of variability is the standard deviation. The higher its value, the higher the variability. As Chart 23 shows, there was a slight upward trend in regional differences in the number of FTEs.

Chart 23 – Trend in the standard deviation of the number of FTEs in the regions



It is useful to compare the amounts paid to each region over the whole reporting period with the trend in the number of FTEs in each region. On this point, we do not assume a causal link, but simply observe the two variables side by side and quantify the significance of the correlation. In this case, the correlation coefficient is only 1%, so the two variables are not correlated.

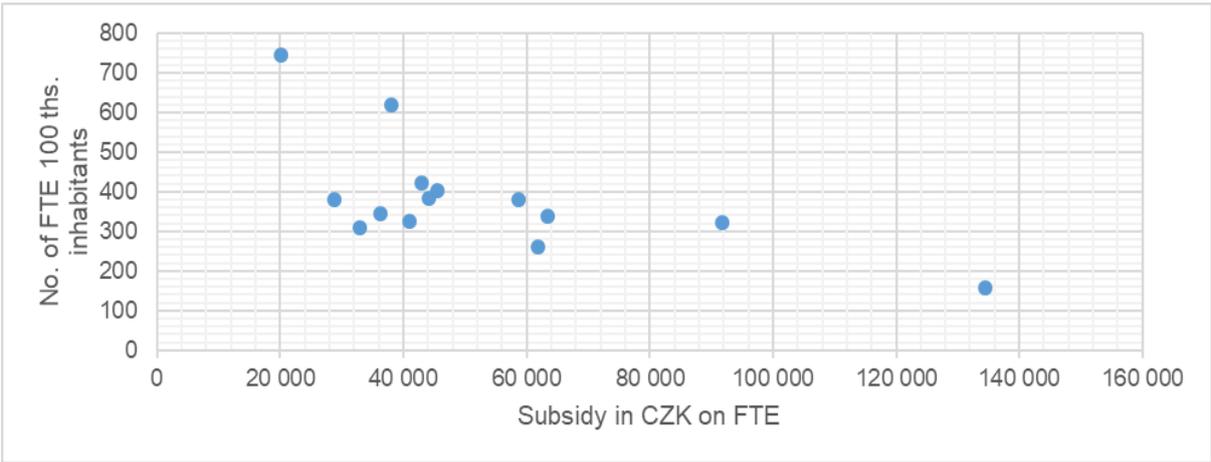
Chart 24 – Subsidies to individual regions and number of FTE doctors per 100,000 inhabitants



We get a different result if we again compare the number of FTE doctors per 100 inhabitants, but this time with the subsidy paid to the region over the reporting period, converted into the number of FTE doctors. Here we are referring to the average FTE doctors in a given region over the whole reporting period, not to the number of resident doctors covered by the subsidy. In this case, the correlation is negative and quite strong (the correlation coefficient is -63%).

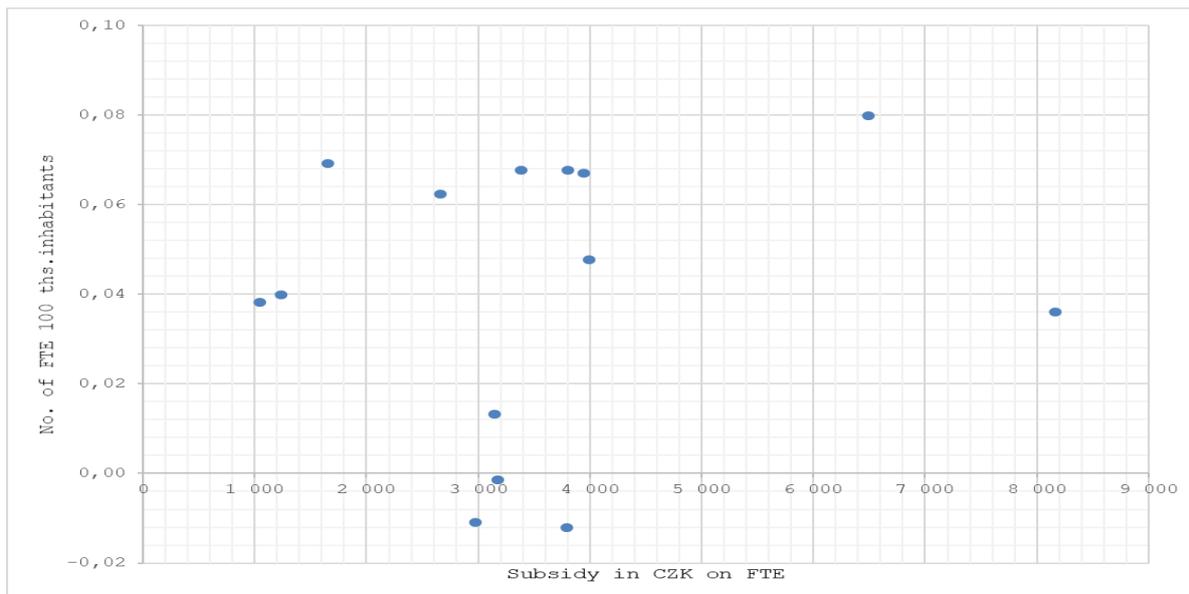
In other words, a higher subsidy per FTE went to those regions where there are relatively few FTE doctors. However, this is not because of any intentional bias in the distribution of the subsidy, as we have stated above, but due to the simple fact that, in this calculation, the subsidy is spread among more FTEs in those regions where there are more FTEs, so that its relative amount decreases and vice versa.

Chart 25 – Subsidies to individual regions per number of FTEs and number of FTE doctors per 100,000 inhabitants



It should be borne in mind that this analysis is skewed by a time lag. Even if we were to assume that there is a region-specific effect of residency subsidies, this would have to manifest itself over a time horizon of about 5 years. For this reason, we carried out a time shift for another correlation analysis, but here too the correlation is very weak (a correlation coefficient of 11%).

Chart 26 – Subsidies to individual regions per number of FTEs and number of FTE doctors per 100,000 inhabitants, with a shift to 2010-2015 (subsidies) and 2015-2020 (FTEs)

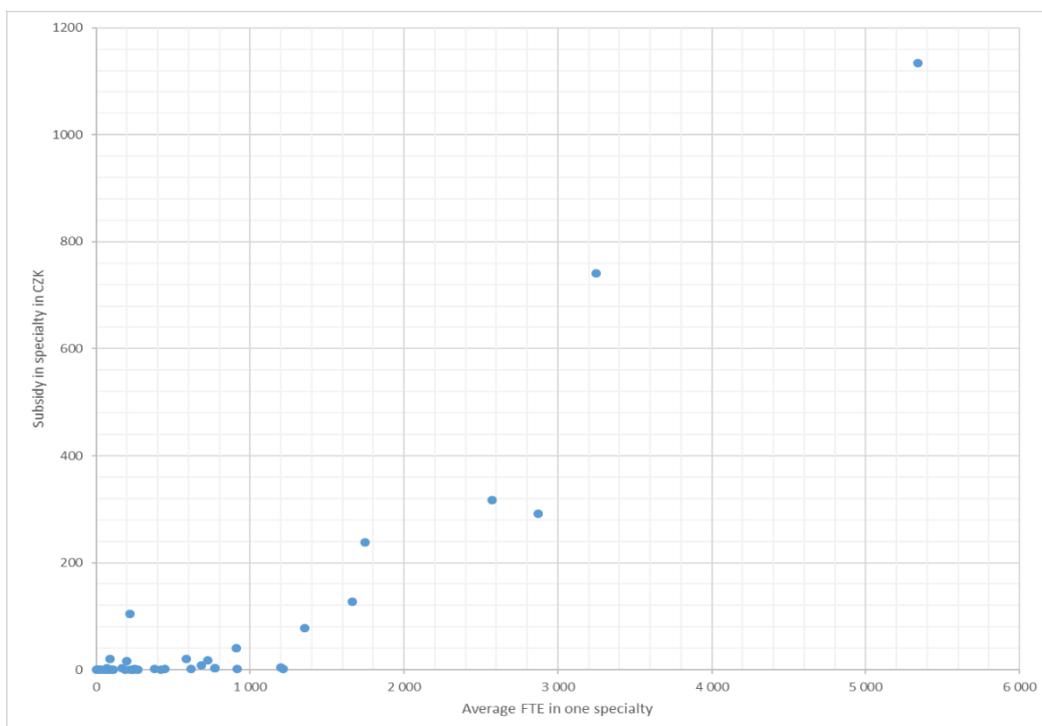


### 3.2 Disciplinary dimension

As in Section 3.1, we examine the correlation between expenditure and indicators that we consider to be measures of outputs, outcomes and benefits.

A logical conclusion can be drawn from Chart 27: the more FTEs in a given discipline, the greater the sum of subsidies received by that discipline in the reporting period. This is naturally associated with a larger number of potential trainers. The correlation is positive and strong, with a correlation coefficient of 91%.

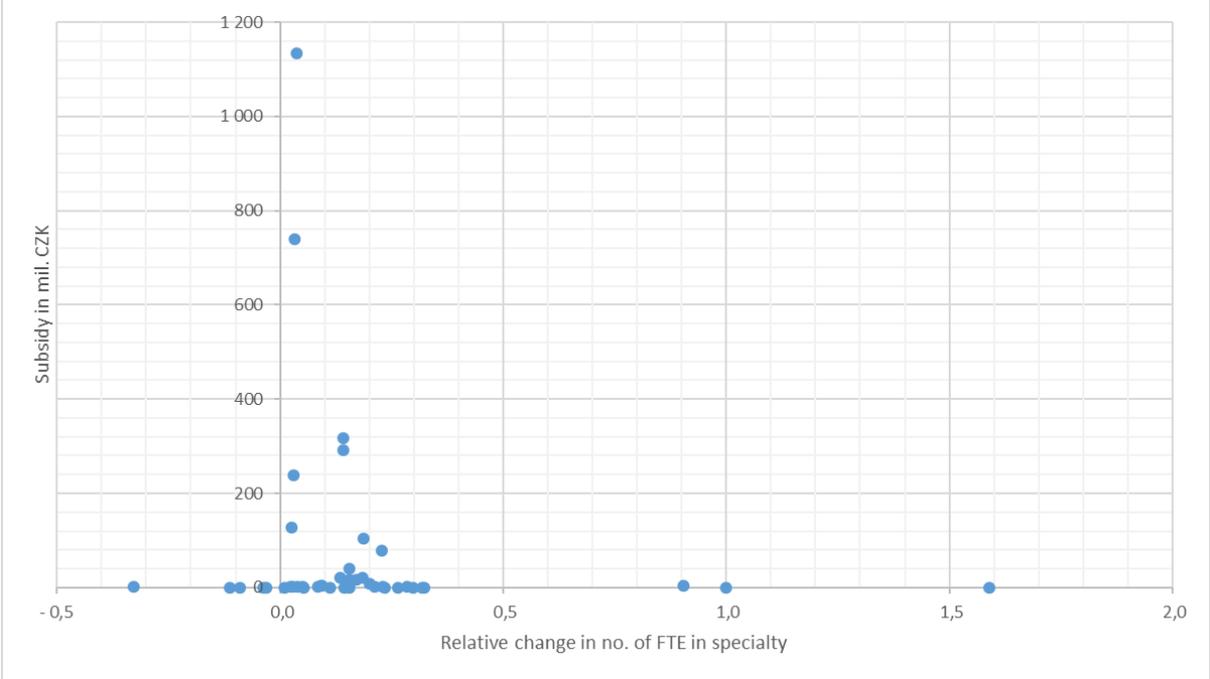
Chart 27 – Subsidies disbursed per discipline and average number of FTEs in individual disciplines



In contrast, the correlation is negative and very weak (a correlation coefficient of -10%) if we link the amount of the subsidy to the relative change in the number of full-time jobs over the reporting period.

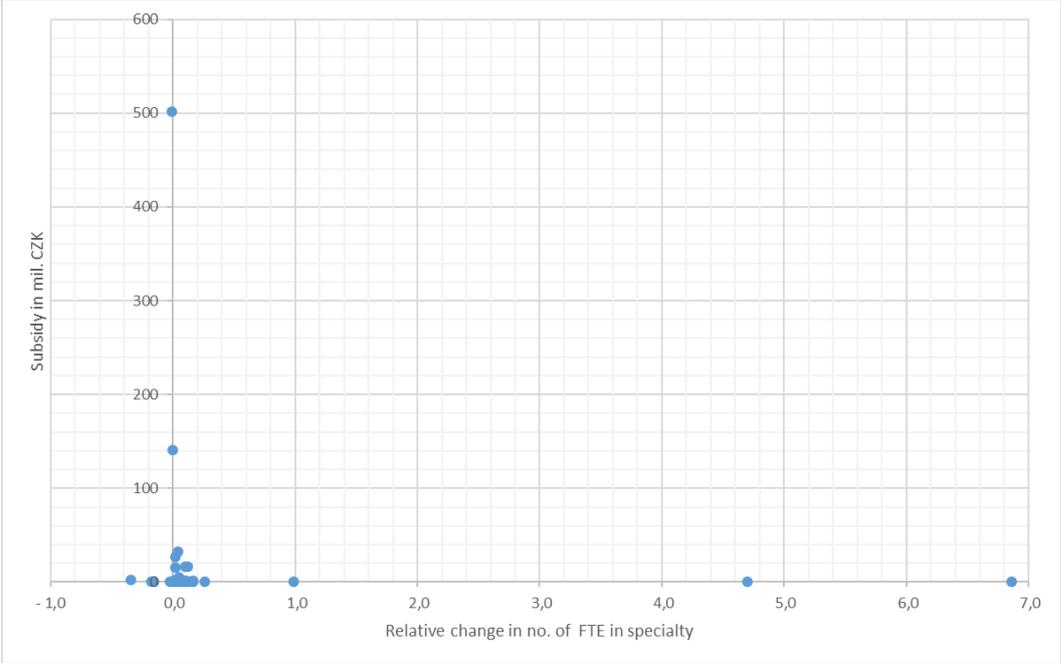
The negative sign would indicate that a higher subsidy amount is associated with a relatively lower increase, or even decrease, in the number of FTEs:

Chart 28 – Subsidies disbursed per discipline and relative change in the number of FTEs in individual disciplines



This is another case where the time lag in the potential effect of the subsidy, i.e. from its disbursement to the time the fully trained doctor starts practising, needs to be taken into account. The results are shown in Chart 29. There is almost no correlation here (a coefficient of -6%).

Chart 29 - Subsidies disbursed per discipline and relative changes in the number of FTEs in individual disciplines, with a shift to 2010-2015 (subsidies) and 2015-2020 (FTEs)



Nor was any correlation observed for the trend in the subsidy rate and changes in the number of FTEs in individual disciplines.

**In the light of the above, we conclude that the hypothesis that a subsidy has no impact on the trend in disciplines or regions cannot be rejected.**

## 4 Programme objectives, effectiveness

Since 2012, the programme objectives have been defined as follows:

*“Programme 1 – Core curriculum subsidies*

*(a) financial support for medical graduates to pursue follow-up postgraduate studies in medical disciplines (specialised training) at the level of the core curriculum.*

*(b) financial support for medical health professionals who have already completed part of their specialised training under the core curriculum.*

*Programme 2 – Complete specialised training*

*(a) financial support for medical school graduates to pursue follow-up postgraduate studies ( specialised training) for the duration of complete specialised training in selected medical disciplines in which there is a shortage of specialists, either nationwide or in particular regions.*

*(b) financial support for medical health professionals who have already completed part of their specialised training in a selected medical discipline.”*

The term “shortage of specialists” is not defined anywhere and is not based on any quantifiable indicators. There is therefore no objective, measurable criterion to determine which medical discipline will be included in the programme. No reference is made at all to the core curriculum subsidy.

The definitions of the objectives focus on the “financial support” aspect. They have no direct link to the availability or quality of health services. Nor do they in any way reflect priorities within the geographical structure of the health services provided.

We would also point out that the MoH, when formulating objectives, focuses primarily on the first part of the result chain (Figure 1), i.e. on inputs (“financial support” – i.e. we will spend public funds). However, the objectives for outputs and outcomes are missing, i.e. what the taxpayer will get for these public funds, how the health services provided to them will improve or how their standard of living will increase. The aspect of the “shortage of specialists” could be included among the outcomes, but only if it is more precisely defined with a view to mitigating or eliminating the shortage.

Figure 1: The result chain of performance concept



Source: ROBINSON, M. Performance-based Budgeting, Manual, CLEAR Training material, 20. Available at: [www.theclearinitiative.org/PDFs/CLEAR\\_PB\\_Manual.pdf](http://www.theclearinitiative.org/PDFs/CLEAR_PB_Manual.pdf), 8-22.

The officially defined MoH objectives also include a reference to “particular regions” giving the impression that prioritisation may exist depending on the different situation in each region. Although a regional criterion was included in the application assessment methodology, in practice there was no regional prioritisation. For example, there was no indication of what score was to be assigned to a given level of regional need/unavailability. Therefore, subsidies do not really reflect region-specific considerations, not only in terms of any difference in value, but also in terms of the very existence of such differences.

The authors of the Final Report also addressed the question of the extent to which the subsidies studied could be said to have an incentive effect on their recipients. In their search for an answer, they concentrated on the share that a single residency subsidy has in the revenues received by healthcare facilities from health insurance funds:

Average hospital, 2021: 0.02%

Average GP surgery, 2021: 17.16%

It can be inferred from this example that the incentive effect will be higher among providers with low output and revenue values, typically single-doctor practices providing outpatient care.

Data on the successful/unsuccessful completion of postgraduate training would be useful in analysing the effectiveness of the residency programme, but such data is not available. Likewise, there is no data on the number or percentage of trainees for whom trainers do not receive residency subsidies. A comparison of the two cohorts, one with and one without subsidies, would make it possible to articulate much firmer recommendations on how to make the residency programme more effective.

## 5 Conclusion: Recommendations

This section may be construed as the main contribution of the Final Report, or indeed the whole Spending Review pilot project, to potential changes in the approach to and configuration of residency subsidies.

### 5.1 Data

The unavailability of certain relevant data impairs the capabilities of the Spending Review in relation to residency subsidies. In some cases, it was possible to bridge this gap with estimates (number of residents), while in other cases it was necessary to draw on data that was not entirely relevant (VZP data on the specialisation of a department rather than the specialisation desired of a staff member). For this reason, the following recommendations would appear to be merited:

- Record the number and structure of trainees for whom subsidies are disbursed.
- Extend the time series for key indicators in both the regional and disciplinary dimensions, as the time series is currently very short, especially when factoring in a time lag between the disbursement of the subsidy and the completion of the training.
- Monitor the success rate of trainees, i.e. whether they have successfully completed their postgraduate training and can practise independently and unsupervised.
- Systematically monitor the number, structure and success rate of trainees who do not receive residency subsidies.

### 5.2 Formulation of objectives

- Objectives should not be defined solely at the level of inputs (the “financial support” of providers or trainees).
- Formulate objectives at the level of outputs and outcomes.
- Objectives should be quantifiable, measurable and evaluable.
- The above also applies to the definition of “shortage of doctors”.

### 5.3 Prioritisation

In view of the fact that no prioritisation has been undertaken in the past and is not being undertaken at present, the following recommendations can be made with limited state budget resources:

- Allocate resources to disciplines with the greatest (potential) shortage of doctors.
- Allocate resources to regions with the greatest (potential) shortage of doctors.
- When prioritising, take into account the age structure of doctors as a predictive mechanism for defining potential (future) shortages.
- When prioritising, take into account the share of a subsidy in the healthcare facility’s revenue and what incentive effect it has.

### 5.4 Funding

- Eliminate duplicated funding from the state budget and the budgets of health insurance funds.
- The MoH should coordinate its actions with health insurance funds in this area, taking into account the above-mentioned prioritisation.

## 5.5 Increased effectiveness

- Consider the possibility of linking (part of) the subsidy to the subsequent pursuit of a medical profession in a given region or directly in a healthcare facility in order to reinforce the effectiveness of the public funds expended.
- Similarly, consider the possibility of factoring in the success rate in the completion of postgraduate training.

## 5.6 Opportunities for further analysis

Scope remains for further analysis in the future:

- Comparison of healthcare facilities that provide training without a subsidy with those that provide training with a subsidy.
- Interlinking of the geographical and regional dimensions.
- A more detailed analysis of the geographical dimension at the level of districts, municipalities with extended competence, or even at the level of single municipalities.
- A more detailed analysis of subsidy recipients that would expose potential long-term under-use of subsidies, e.g. among a minority of (about twenty) regional hospitals.
- The performance of analysis with a longer time series than we have now.
- A better quality analysis, such as panel regression, would take into account more factors affecting changes in FTE doctors in both dimensions. Here, however, we are doubtful that all of the numerous influences could be quantified and captured statistically.
- Extension of the analysis to other tools affecting the number and structure of doctors in the Czech Republic.
- Comparison of the results achieved by trainees in subsidised residencies and trainees without a subsidy under this programme.

## **Appendix: Observations of the Ministry of Health**

The “Residency” subsidy programmes run by the Ministry of Health pursuant to Section 21a of Act No 95/2004 on conditions for the acquisition and recognition of professional competence and specialised competence to pursue the medical profession of doctor, dentist and pharmacist (“Act No 95/2004”) are intended to support the specialised training of doctors by disbursing subsidies from the state budget that partially cover the costs incurred by accredited institutions (health service providers) in the provision of pre-examination training for doctors employed by them.

Besides the financial cost of remunerating a resident, the specialised training of doctors also places a burden on healthcare providers to find trainers and compensate them appropriately. If healthcare providers arrange specialised training for young doctors, they should have a certain guarantee that a doctor in whose training they have invested not only financial resources, but also the time and commitment of trainers, will remain in the employ of the healthcare provider or in the region after acquiring specialised competence.

Since training young doctors is very costly, healthcare providers are often not properly motivated to take on young doctors who have recently graduated to undertake specialised postgraduate training at their facilities. In particular, smaller health service providers in peripheral regions, where the staffing of health services is at its most problematic, incur higher costs than those covered by subsidies in employing young doctors without specialised competence, and this only exacerbates the staffing crisis further. As such, residencies also become a tool through which the Ministry of Health can influence the staffing of health service providers. The Ministry of Health is aware that the format of the subsidy programmes, which is based on their legislative enshrinement in Act No 95/2004, is not ideal and has made efforts to optimise it, most recently in 2019, when an amendment to the Act relating exclusively to the funding of residencies was drafted. However, in the interministerial comment procedure, the Ministry of Labour and Social Affairs raised concerns about the draft that could not be resolved without negating the main principles of the amendment. Nevertheless, partial modifications that do not require legislative changes are incorporated into the subsidy programmes every year, whenever calls for applications are announced. By making these modifications, the Ministry of Health is trying to respond to the current situation in the health care system and/or to various recommendations made about the programmes, e.g. by the Supreme Audit Office.

The fact that the format of funding for specialised training within the scope of residencies is laid down in considerable detail by law means that the Ministry of Health is severely limited in its ability to modify the subsidy programmes or to change the overall approach to the uptake of residencies.

Observations on individual sections of the Final Report.

### **Section 2 – Data analysis**

The analysis authors themselves note that the data they analysed came from multiple sources and also mention that the data series are not always complete, with missing data being replaced by estimates. The data had been gathered and monitored by the various original sources (owners) for varying reasons. The Institute of Health Information and Statistics, health insurance funds, and the Institute of Graduate Medical Education (as the administrator of the subsidy programme) collect data for their own varying purposes and in different ways.

The Ministry of Health does not contest the data analysis outputs and is sure to use them in future decision-making on how residencies are to be run.

### **Section 3 – Efficiency**

In the Final Report, the authors test the hypothesis that residency subsidies have no effect on the geographical or disciplinary structure of doctor FTEs, nor on the total number of FTEs.

Residencies are sometimes also presented by the Ministry of Health as a tool to influence the number of health professionals and their deployment in a region. However, the main benefit and purpose of subsidy programmes is to enable health service providers to deliver specialised training in the first place. The Ministry of Health has estimated that it costs CZK 1 million per year per trainee undergoing specialised training, and that specialised training is essential for doctors because they cannot practise their profession independently without it. Therefore, on the one hand, the state sets the qualifications required in the pursuit of a profession and defines the way in which the required qualifications can be obtained, and, on the other hand, in view of the high cost of specialised training, it makes such training feasible by running subsidy programmes. As noted above in the introduction to the Ministry of Health's observations, health service providers are not always willing, and often not even able, to provide specialised training for doctors in any other way.

We therefore argue that the efficiency of subsidy programmes should be analysed from this perspective. That is, how the system of specialised training would work and what its throughput would be in the absence of subsidies to fund specialised training within the framework of residencies. We acknowledge that the Ministry of Health does not currently have enough data for such a comparison, but the planned information system for monitoring and managing specialised training should fill this gap. This system is discussed further in the observations on Section 5.

### **Section 4 – Programme objectives, effectiveness**

The Ministry of Health is aware of gaps in the definition of programme objectives, as presented in the methodologies for each year, and is willing to rectify these shortcomings. Besides clarifying the specific outputs and outcomes to be delivered by the programmes, indicators and their target values will also be newly established in the methodology. This step will, among other things, make it easier to assess the efficiency of the programmes.

The analysis authors point out that in subsidy “Programme 1 – Core curriculum subsidies”, the stated objectives do not stipulate that the subsidy will focus on training in fields where there is a shortage of specialists. However, this merely reflects the legislative framework of the programme, with Act No 95/2004 directly stipulating that subsidies for training under core curricula are intended for training under all core curricula. Consequently, the law does not allow the subsidy provider to proceed in any other way, which makes it futile to focus on specialisations where there is a “shortage”.

As to the issue of regional prioritisation, we note that one of the criteria according to which accreditation committees assess applications for residencies covering complete specialised training is the regional criterion (the need for experts in a given discipline of specialised training in the relevant region of the Czech Republic and the need to support the maintenance and development of the discipline in that region). This mandatory evaluation criterion is mentioned in the subsidy programme methodology, including the information that the accreditation committee can award up to 30 points for it.

## **Section 5 – Recommendations**

### Data

The authors state that the unavailability of relevant data has a negative impact on the capabilities of the Spending Review. The Ministry of Health agrees with this assertion, and mentions this issue itself in the introduction to its response. It is precisely because the data needed to manage the specialised training system is lacking that the Ministry of Health is developing an administrative information system for the specialised training of health professionals. This system should cover all entities and areas of specialised training, from the accreditations of health service providers to activities carried out by “commissioned organisations”, over multiple levels and work modules. The development of the information system is included in the National Recovery Plan, where it can be found as activity 6.1.1 (“Optimising the training system”) under component 6.1 (“Increasing the resilience of the health care system”).

We therefore agree with the recommendations made.

### Formulation of objectives

As indicated in our observations on Section 4, we are aware of the weaknesses in this regard and are willing to rectify them.

### Funding

It was not possible to approach health insurance funds in the time frame allotted to us to make observations on the recommendations. Nevertheless, the Ministry of Health is prepared to take action to remove any duplication. We would point out that this is a very long-term issue.

### Increased effectiveness

As to the possibility of tying a subsidy to the requirement to pursue a health profession in a particular region – this requirement did exist in the original format of the subsidy programmes (until 2012) (and was covered by “stabilisation contracts”). However, it was dropped from the law for a number of reasons, including the fact that, in practice, it was impossible to demand and enforce this obligation from doctors.

As to the possibility of taking into account the success rate in completing postgraduate training, we note here that the individuals who undertake the specialised training and who have the main and perhaps exclusive influence on the success rate in completing postgraduate studies are not the subsidy recipients. Consequently, subsidy recipients could be penalised for facts over which they have had little, if any, control. Not to mention the fact that there are many reasons why even a doctor who has prepared diligently and rigorously for a core/attestation examination may not pass it.

Both of the above recommendations have been repeatedly considered by the Ministry of Health, including in the preparations for the amendment to the Act, but have proved ineffective.

### Opportunities for further analysis

As mentioned in the response to the section entitled Data, the planned information system should be capable of further more detailed analyses, including, for example, comparisons of the course and success of specialised training among those who do and do not undertake residencies.

The Ministry of Health is aware that such analyses are necessary for its decision-making and is by no means opposed to them.