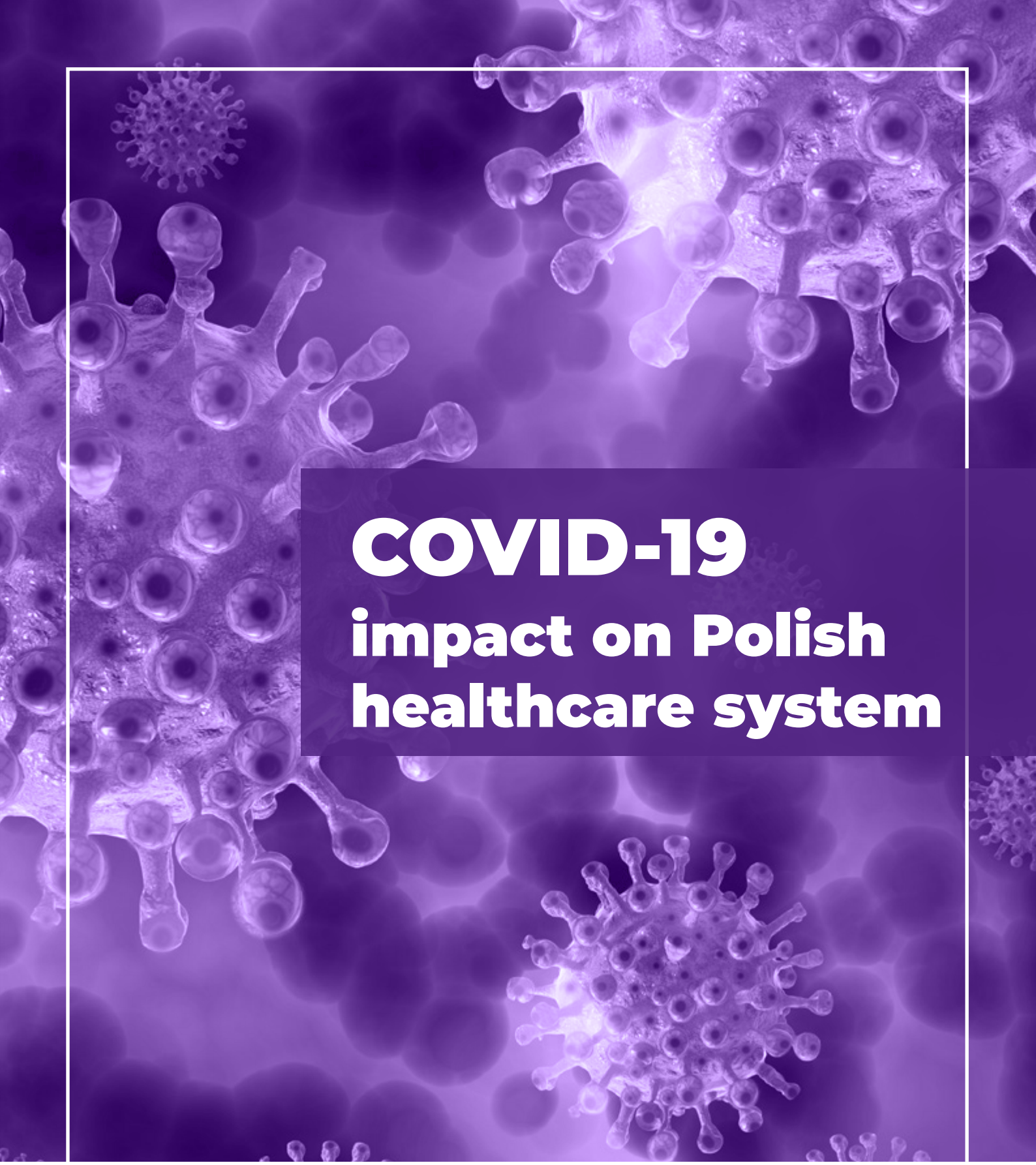

COVID-19
impact on Polish healthcare system

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Contents

EXECUTIVE SUMMARY

- Polish healthcare system is financed in 69.4% from public sources. Among those, health insurance contribution is the most prominent source of financing which comprises 59.1% of total funding and 85.1% of the public healthcare revenues alone. The remaining portion of public healthcare revenues is financed supplementary by transfers from central and local governments; most of this sum comes from the central budget.

- It is beyond obvious, that the current indirect economic crisis caused by the pandemic, in the form of economic recession, as well as direct effects in the form of measures aimed at limiting infections, will impact both revenues and expenditures of public healthcare sector. The situation is however nuanced and calls for a granular analysis of public healthcare revenue and expenditure categories.

- A four scenario forecast on the revenue side (public payer only) has been prepared to investigated possible COVID-19 impact on the public healthcare sector. Three scenarios assume that the lockdown will not return, with varying severity of recession and pace of recovery, while the fourth, worst-case scenario foresees a very damaging second wave of COVID-19 and resulting fallout of the double-dip recession in the economy.

- Assuming that a second wave of pandemic will not occur, we predict that NFZ revenue from contributions would fall by 3.1%-4.5% (2.9 – 4.2 bln PLN) in comparison with financial plan for April 2020. In the worst-case scenario, this shortfall could be widened to 6.9% (6.4 bln PLN).

- The extent of NFZ's revenue shortfall is smaller than initial predictions, because the government anti-crisis bill includes provisions for refunding lost contribution income due to waived contributions for employers and self-employed. Another factor offsetting NFZ's losses is increased revenue from contributions deducted from state pensions and budget-financed contributions of the officially unemployed.

- As of June 2020, NFZ's recent forecast is more optimistic, as it assumes a revenue shortfall of 2.1% (1.9 bln PLN) compared with original plan. However NFZ's approach, has less detailed assumptions and does not take into account recent economic data and legislative measures, such as Solidarity Benefit. It also does not provide insight into possible alternative scenarios and risk factors.

- On the expenditure side, a historical analysis was prepare to investigate whether the loss in NFZ's revenues will limit its expenditures. In the past healthcare expenditures in GDP terms were not bounded by NFZ revenues, notably lower healthcare contributions. Historically, NFZ has shown that its expenditures act countercyclical. This policy was possible thanks to a financial buffer in the form of capital reserve. The 2018 capital reserve level, 2018 NFZ profit and additional funding from the central budget suggest that at the end of 2019 NFZ capital reserve was at its highest level ever. Therefore NFZ has ample resources to keep its spending independent from the lower revenue inflow.

- Considering the fact that NFZ expenditures are broadly independent from revenues (at least in one year term) expenditure prediction took the form of qualitative, expert study supported with discussions with relevant policy-makers. The total NFZ healthcare services expenditures are predicted to fall by 1.2 bln PLN in comparison to April 2020 NFZ plan. Mostly due to the decrease in inpatient care - the biggest cost category (almost 0.9 mln PLN fall without reimbursement categories). The second biggest fall in expenditures will concern drug reimbursement categories - a joint decrease by 273 mln PLN. Other cost categories that are expected to decrease are forecasted to decrease by 207 mln PLN.

- On the other hand some cost categories are expected to increase in result of COVID-19 pandemic. This concerns psychiatric treatment and medical emergency services which are predicted to increase by 285 mln PLN. The rest of the cost categories are either socially and politically sensitive (e.g. basic care), difficult to predict (e.g. outpatient care) or broadly unaffected by the pandemic (e.g. care and caring benefits).

- The above considerations concern only indirect COVID-19 effects as it is the central budget that bears the financial brunt of the pandemic. The total direct costs for the central budget are predicted to amount to 774 mln PLN, with indirect effects of COVID-19 for central budget being minuscule. It has to be emphasised that the actual expenditure level will be impacted by political decisions based primarily on the epidemiological situation.

- To investigate the perception of the Polish healthcare system and possible avenues for fighting its underfunding, a survey among 1066 respondents was carried out. It is sure to say that COVID-19 pandemic has considerably improved the opinion on the importance of healthcare system in Poland. In the eyes of the respondents, the government seems to already prioritize the system, which however is still in need of considerable reforms, especially to decrease the financial barrier and to improve access to medical innovations. The society supports this prioritization and is aware of the need to increase healthcare resources, though is reluctant to support the system directly. This might be an outcome of already visible financial barriers to healthcare services in particular. The preferred option is to cut resources in other domains of public interest, notably security and defence, or to find savings in the healthcare system itself. There is little willingness to increase health contribution rate as even tangible efficiency improvements are not enough for respondents to agree to this option.

- It is still too soon to say if the prioritization of healthcare in the eyes of society is a long term phenomenon. However the problem seems to lie in the connection between the high perception of health importance (even accounting for an increase in importance due to COVID-19) and healthcare system funding, and not in the low level of perception itself. It seems that the society does not want to be burdened with financing healthcare directly or indirectly through healthcare contribution rate increase and would prefer the government to take this role.

Introduction to the Polish healthcare system

1.1. Access to healthcare services

Polish citizens have the constitutional right to equal access to health services that are financed from public funds. According to OECD data approximately 92.9% of the population is covered by the system of compulsory health insurance as of 2018. This includes persons paying insurance contributions and their family members. The health care contributions for those who are not receiving wages, other labour income or receiving pensions are financed from the public funds, following the notion of universal coverage. The government is obliged to provide free healthcare to young children, pregnant women, disabled people, and the elderly.

Compulsory health insurance formally guarantees access to a very broad range of health services, with no need for out-of-pocket payments. Except for cost-sharing for pharmaceuticals and certain health resort services the public system does not typically require the insured to participate in health services financing. However out-of-pocket payments from private households accounted for a sustainable part of total healthcare expenses.

Voluntary health insurance is not common although it is gaining prominence. Voluntary health insurance does not yet play an important role and is largely limited to medical subscription packages offered by employers. However it has seen considerable growth throughout recent years. The private institutions are booming providing standard, basic services for the middle and upper class citizens, while most advanced procedures are still performed by the public healthcare system.

Public entitlements guaranteed on paper are not always available, thus the private healthcare popularization. There is little waiting period to visit e.g. a general surgeon, paediatrician or obstetrician. However in some cases, e.g. endocrinology, queuing can take months. Mean waiting time on lists for a number of procedures can be over a year according to OECD 2018 data, as is the case in cataract surgery (544 days), hip (731 days) or knee replacement (852 days). Although, it should be stated, that recently the Ministry of Health has taken effective measures to decrease waiting time for these treatments.

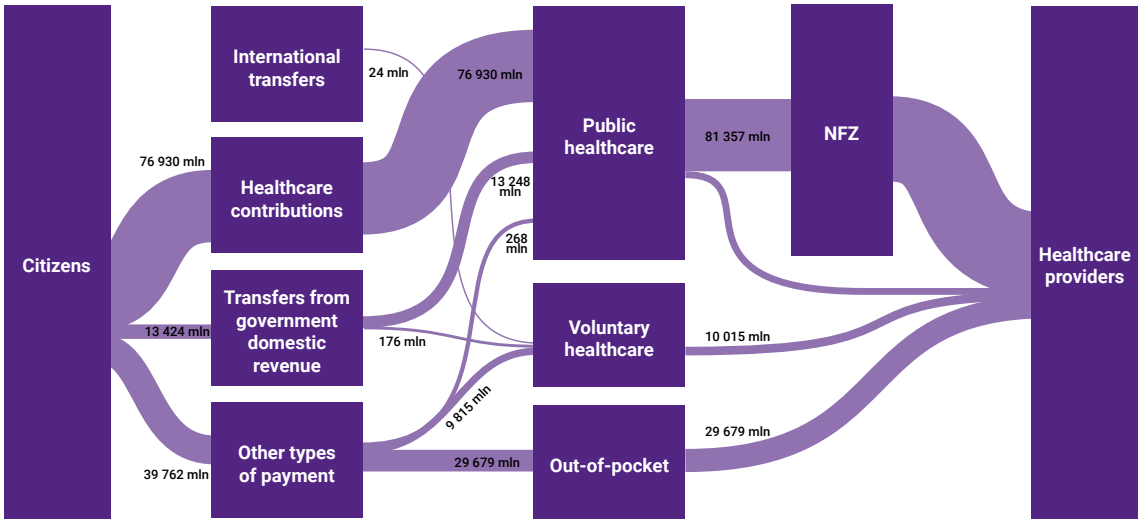
1.2. Polish public healthcare system's main participants

The Ministry of Health is the main policy-maker and regulator in the Polish healthcare system. It has the overall responsibility for governance of the health sector and its organization. It is responsible for national health policy, major capital investments and for medical research and education. The Ministry is also responsible for supervising the training of health care personnel, regulating medical professions, for funding very expensive medical equipment (the responsibility in this area is shared with territorial self-governments) and for setting and monitoring health care standards. The Ministry also finances certain emergency medical services and has a number of supervisory functions.	Policy-maker and regulator **Ministry of Health**
The public payer role is taken by the National Health Fund (NFZ) whose major task is to finance health services provided to the publicly insured population. It negotiates and signs contracts for service provision with health care providers (setting their value, volume and structure), monitors the fulfilment of contractual terms and is in charge of contract accounting. The NFZ has limited regulatory powers, yet it has some influence on prices of contracted services. It also develops, implements and finances health programmes. Furthermore, it is also tasked with health promotion, monitoring of medical prescribing and maintaining the Central Registry of Insured Persons.	Public payer **National Health Fund**
Territorial self-governments are typically the owners or have a so-called quasi-owner position (they are the establishing bodies) for the majority of public outpatient clinics and hospitals. They are responsible for maintaining capital investments and perform a range of supervisory and control functions but have virtually no influence on their contracts with the NFZ. They are also responsible for health promotion and prevention, as well as medical emergency services in their region.	Owners or quasi-owners of most stationary healthcare providers **Local self-governments**
The healthcare providers are public and non-public healthcare units as well as individual and group medical practices. The public entities that dominate the picture in stationary healthcare, while non-public providers are more present in ambulatory care.	**Healthcare providers**

1.3. Financial flows

Polish healthcare system is financed in 69.4% from public sources. Among those, health insurance contribution is the most prominent source of financing which comprises 59.1% of total funding and 85.1% of the public healthcare revenues alone. Those contributions are collected from people employed in non-agricultural sector by Social Insurance Fund (ZUS) while farmers' contribution is collected by Agricultural Social Insurance Fund (KRUS). The NFZ pays ZUS and KRUS for collecting health insurance contributions (the involvement of those funds in the sphere of health is limited to collection of those contributions). The public healthcare system is financed supplementary by transfers from central and local governments. In 2017, financing from those sources covered 10.3% of public healthcare system revenues. Most of this sum comes from the central budget.

Figure 1
Polish healthcare system 2017 financial flows (in PLN)

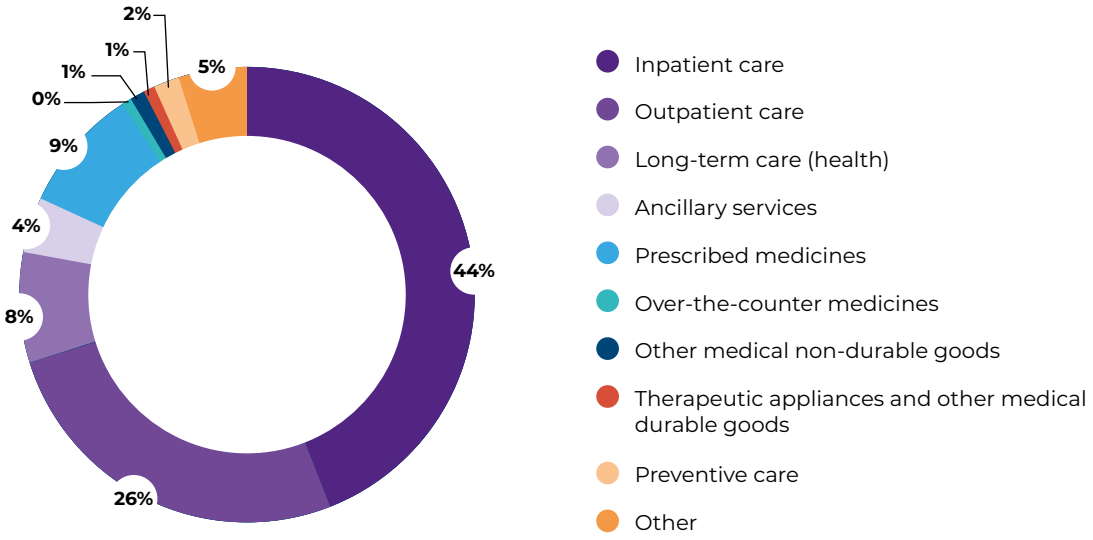


Source: own elaboration based on Narodowy Rachunek Zdrowia (Polish Statistical Office 2019)

44% of public healthcare spending takes the form of inpatient care. Approximately 1/4th of the total sum for the public sector is used for outpatient treatment. Other cost categories are considerably smaller with prescribed medicines taking the third place with 9% portion of total public expenses and long-term care being fourth with 8%.

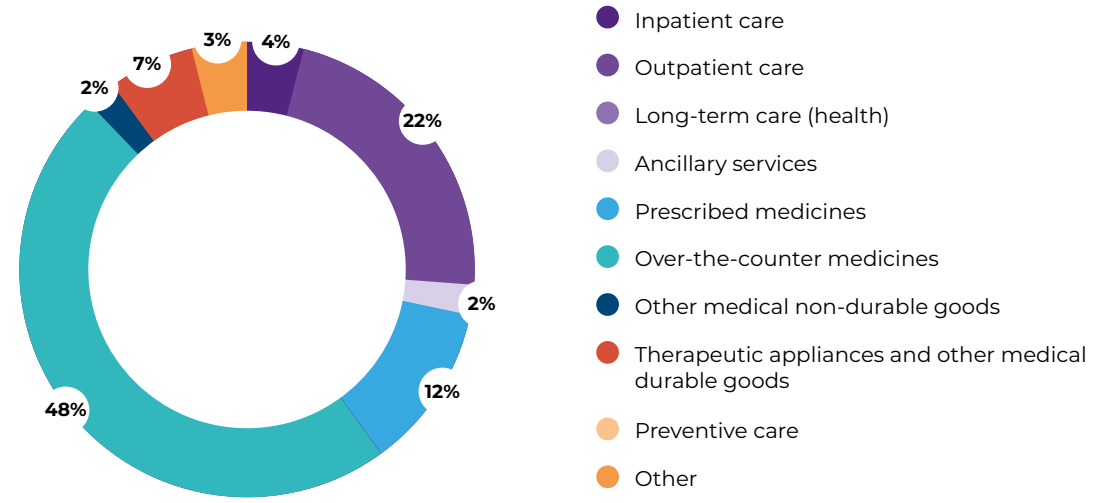
Private healthcare spending takes the form of direct payments and cost-sharing or voluntary private insurance. As of 2017 approximately 30.6% of health expenditure came from private sources. Direct, i.e. 'out-of-pocket' payments formed the biggest chunk of this sum and amounted to 22.8% of total healthcare expenditure. Over-the-counter medicines expenses proved to be the most costly category. It amounted to ca. 44% of all direct expenses, which translates into 0.6% of GDP – the highest indicator among OECD countries. 1/3rd of all direct healthcare payments is used to acquire outpatient care. 11% of direct payments resulted from prescribed medicines' costs, partly co-payments.

Figure 2
Public healthcare system expenditure composition in 2018



Source: stats.oecd.org

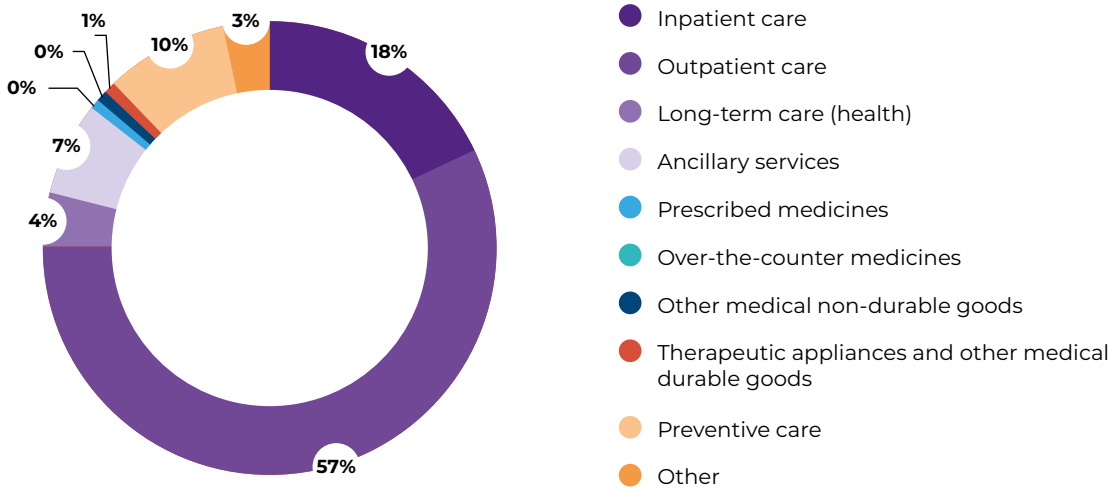
Figure 3
Direct healthcare expenditure composition in 2018



Source: stats.oecd.org

7.7% of all healthcare expenses took the form of voluntary private insurance. This mode of financing is used for outpatient care even to a greater extent than in direct expenditures case (57% of voluntary financing). Almost 1/5th of the sum is used for inpatient care and 10% for preventive care.

Figure 4
Direct healthcare expenditure composition in 2018



Source: stats.oecd.org

It should be emphasised that the private financing of healthcare is booming thanks to a number of factors. Due to public healthcare patients' low satisfaction and long queues for specialty doctors and a number of surgical treatments, Poles (a wealthy part of the population in particular) are more and more determined to pay for doctor's appointments, one-day hospital stays and rehabilitation treatments.

The main cause for the retreat from public healthcare is the underfunding, that has been and remains the main problem for the Polish healthcare sector. The level of healthcare sector financing from public sources is one of the lowest in Europe. In 2018, Poland spent 6.3% of its gross domestic product on health, which is the fifth lowest result among OECD countries. This result could have been even lower if it have not been for the relatively high share of private expenses in total healthcare costs.

To counteract the underfunding the Parliament voted to increase the public spending on healthcare from the current 4.6% to 6% of GDP by 2024[1]. This is an unprecedented growth as in the 1990-2017 period we have only seen a 0.4 percentage point growth. Those funds would be used to increase the quality of public healthcare, raise wages for in the sector and decrease accessibility issues. In the event the private sector growth path seen in the last decade would not be altered the healthcare expenses could reach over 8.5% of GDP by 2024, an indicator which is on par with such countries as Italy, Spain and Portugal today.

1. Bill of 5 July 2018 (Dz. U. poz. 1532).

COVID-19 impact on healthcare system revenues

2.1. External forecast of COVID-19 economic impact

The COVID-19 forced the government to implement contagion-limiting measures that unfortunately affected the Polish economy. So far (July), our economy hasn't returned to the full capacity and will not do so within this year. The slowdown disturbed the labor market, public finances, and thus NFZ's revenues as well.

The already available data provides some insight into the scope of the slowdown[2]:

- in May 2020 (data for June hasn't been published yet) employment in enterprises employing 10 or more people (38 percent of employees in Polish economy) was 240 thousand lower than in March, while the average salary decreased by over PLN 370. It implies that this category could cause NFZ's April and May revenues to be lower by over PLN 400 million. If the unfavourable situation on the labor market persists in consecutive months (in 10+ employees firms) NFZ's revenues would be lower by PLN 1.9 billion;
- in May 2020 the number of unemployed increased by over 102 thousand, compared to the end of March (from 909 thousand to 1011.7 thousand);
- in January-June 2020 period, the state budget tax revenues were PLN 11.8 billion lower than in the same period of 2019.

This is just the beginning of the COVID-19 impact on the polish economy. However, since our economy has never been in this type of lockdown before, and we have never acted in such uncertainty, it is very difficult to foresee the changes that will take place. The closest comparable to compare to the current situation is the 2008-2009 crisis. However, this comparison can only show trends, not the scale of negative changes in the economy. The COVID-19 crisis not only has intensified the previously observed trends (slowdown) but also has also added new ones, including a decrease in employment or reduction in salaries, which was not expected beforehand. Therefore, the analysis of the situation in the Polish economy caused by the crisis in 2008-2009 can only be the starting point for 2020 forecasts.

The analysis of the situation in the Polish economy in 2008-2009 is based on a comparison of changes caused by the crisis in relation to the macroeconomic forecasts for 2009 prepared by the Ministry of Finance (MF). The Ministry of Finance's expected 4.8

2. GUS (Statistical Office); Ministry of Finance

per cent of GDP growth in 2009 (as stated in the Budget Act). The actual GDP growth equalled 1.7 percent, therefore the recession has not materialized. At that time the UE economy shrank considerably by over 4 percent.

The weakening of our economy lasted four quarters (4Q2008-3Q2009) and had no negative impact on employment and wages. Employment in the whole economy was admittedly lower by over 1.0 percent compared to MF predictions, but in the business sector (without microfirms) there was a small increase in employment. There was an increase in wages as well, both in the public and private sectors. Therefore, even with weaker economic growth the labor market has not suffered. Household consumption was the reason for the lack of recession.

Table 1
Basic indicators' change during 2008-2009 crisis

Indicator	*Evolution during crisis*
GDP – rate of growth	***decrease by 2/3***
Houehold consumption „rate of change"	***decrease by over 60%***
Government consumption „rate of change"	***decrease by 20%***
Number of unemployed persons	***increase by 1/3***
Employment in national economy	***decrease by over 1%***
Employment in companies employing 10+ workers	***increase by over 3%***
Wages in national economy	***increase by over 0,5%***
Wages in companies employing 10+ workers	***increase by over 4%***
Wages in public sector	***increase by over 7%***

Sources: own calculation based on GUS and Ministry of Finance data

2008-2009 crisis experience has led to insightful conclusions that could be used in preparing assumptions for the current economic crisis caused by the pandemic:

- decline in the GDP growth rate by 2/3 compared to the macroeconomic forecasts for 2009;
- almost equally strong decline in the dynamics of household consumption;
- relatively small decline in public consumption growth;
- the unemployment started to grow after two months from the beginning of the global financial crisis (bankrupts of Lehman Brothers) and stopped increasing after 17 months (in April 2010). The number of unemployed increased by 725k, i.e. by 90 percent. But the number of unemployed with the right to unemployment benefit has risen only by 200k;
- employment in the national economy slightly decreased, however, not accounting for companies employing less than 10 people, it increased by ca. 3%;
- salaries in the national economy also increased, the increase was stronger in public institutions than in companies;

- there was a stronger increase in the number of ZUS pensioners compared to what the demographic trend implied, i.e. part of this increase was probably caused by „an escape from unemployment";
- there was a decrease in the number of pensioners, but an increase in total pension amount.

All those data show that 2008-2009 crisis can be the base for forecasts for 2020 as general trends that we can expect. However, the predictions for GDP, the labor market, public finance should be based on the real situation in the Polish economy in the second quarter of 2020. Data for that period (industry production, construction production, retail sales, employment and salaries in the enterprise sector, business climate indicators) confirmed that lockdown caused deep economic shocks. In the second quarter of 2020 we can expect a GDP decline by 9% YoY, a decrease in employment (enterprise sector 10+) by a minimum 1% and decline in salaries by 3.5%. It is obvious that the pandemic caused a deep recession, not weakening of the economy as was the case in 2008-2009 period.

Additionally, we do not know what will happen in the second half of 2020. It depends on the pandemic situation and the level of uncertainty about the possible return to lockdown.

Therefore, the baseline scenario for the situation in the Polish economy in 2020 was based on the forecasts of various global and Polish institutions, such as preparatory forecasts.

The government presented the first macroeconomic forecast in the Justification to the Budget Act for 2020 (in 2019). The assumption was a 3.7% GDP growth YoY. In April 2020 Ministry of Finance presented the Convergence Program update in which the assumption regarding GDP has been changed and decrease into minus 3.4%. The Polish government's latest GDP growth forecast for 2020 (from April) equalled – 3.7% in real terms and -0.3% nominally. The government should present macroeconomic forecasts for 2021 draft budget in June together with new forecasts for 2020. Unfortunately, they have not been published yet, probably due to the presidential election.

The National Bank of Poland (NBP) presented its forecasts for the Polish economy for 2020 in March along with the spring inflation report. The projection stated a 3.2% GDP growth YoY. The next inflation report should have been published at the beginning of July. In June NBP collected expert forecasts (presentation on the NBP website in July). They show that with a 50 percent probability, the 2020 GDP decline will be between 1.8 and 5.0 percent. Nevertheless, that is not the NBP official forecast.

Polish Economic Institute (PEI) provided analysis and expertise for the implementation of the government Strategy for Responsible Development. PEI prepared and published a forecast for the GDP decline in 2020[3] in two scenarios: with and without a second wave of COVID-19. The assumption in the first scenario is 7.1% GDP decline YoY, and in the second scenario: 4.0% GDP decline YoY. Both scenarios include a decrease in domestic consumption and strong decline in external demand.

European Commission's spring 2020 economic forecasts assumes the polish economy will shrink by 4.3% YoY. The consecutive summer economic forecasts (July) the commission predicts a deeper recession for all UE countries, including Poland. The new GDP growth number for the Polish economy in 2020 is -4.6%. The European Commission

3. https://pie.net.pl/wp-content/uploads/2020/05/Miesiecznik-Makroekonomiczny_4-2020.pdf; forecast based on input-output model.

also writes: “Given the unusual uncertainty surrounding economic projections, this forecast continues to be based on a number of critical assumptions. Most importantly, it is assumed that containment measures in the EU will be gradually further lifted and no major second wave of infections will trigger new generalized restrictions. However, continued social distancing measures are factored in with repercussions on sectors requiring interpersonal contact. The fiscal and monetary policy measures credibly announced up to the cut-off date are expected to support the recovery and prevent large-scale bankruptcies and layoffs. Still, insolvencies and employment losses across the Member States are likely to occur. At the global level, the still rising rate of infections, particularly in the US and emerging markets, has deteriorated the global outlook and is expected to act as a drag on the European economy.”[4]

The World Bank’s latest (June) forecasts expects a 4.2% GDP decrease YoY.[5] The institution is concerned about the long term economic effects of the pandemic: “beyond the staggering economic impacts, the pandemic will also have severe and long-lasting socio-economic impacts that may well weaken long-term growth prospects – the plunge in investment because of elevated uncertainty, the erosion of human capital from the legions of unemployed, and the potential for ruptures of trade and supply linkages.”[6]

The International Monetary Fund (IMF) predicted in April that the polish economy would be in recession in 2020. According to the prediction, the decline will equal 4.6% of GDP. Its forecasts presented in July has not altered this number. The IMF notes that “the COVID-19 pandemic has had a more negative impact on activity in the first half of 2020 than anticipated, and the recovery is projected to be more gradual than previously forecasted. As with the April 2020 projections, there is a higher-than-usual degree of uncertainty around this forecast. The baseline projection rests on key assumptions about the fallout from the pandemic. In economies with declining infection rates, the slower recovery path in the updated forecast reflects persistent social distancing into the second half of 2020; greater scarring (damage to supply potential) from the larger-than-anticipated hit to activity during the lockdown in the first and second quarters of 2020; and a hit to productivity as surviving businesses ramp up necessary workplace safety and hygiene practices. For economies struggling to control infection rates, a lengthier lockdown will inflict an additional toll on activity.”[7]

European Bank for Reconstruction and Development (EBRD) predicts a decline in Polish GDP of 3.5% (May 2020). The explanation for a relatively mild GDP drop was the implementation of government’s programmes dedicated to support enterprises and households: “The Polish government announced several ‘anti-crisis shield’ packages, worth almost 15% of GDP. They focus on protecting employment (wage subsidies), companies (liquidity injections), healthcare (infrastructure improvements, including telemedicine), strengthening the financial system (central bank measures), and higher public investment. The central bank has assisted the government during several purchase operations of government-backed securities from domestic financial institutions, especially the State Development Bank (BGK) and the state-run Polish Investment Fund (PFR). These two institutions have been key players in managing the crisis policy response.”

4. https://ec.europa.eu/info/sites/info/files/economy-finance/summer_2020_economic_forecast_-_overview.pdf
5. Global Economic Prospects: file:///C:/Users/MAGOSI~1/AppData/Local/Temp/9781464815539.pdf
6. as above
7. https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020

Fitch, Moody's and S&P, the biggest global rating agencies prepared their own forecasts for Poland. The forecasts for these three agencies vary greatly. Unfortunately, the authors do not inform what factors were key to making such assumptions about the decline of the Polish economy in 2020. Nevertheless, it is necessary to take under the consideration those predictions, as Fitch, Moody's and S&P assess the standing of Polish economies and this forecasts affect the cost of capital raised on the market by the Polish government.

Table 2
Credit rating agencies' GDP forecasts for Poland in 2020

	Fitch	*S&P*	*Moody's*
	June 2020	*May 2020*	*May 2020*
GDP change (% YoY)	***-3.2***	***-4.0***	***-3.8***

Source: Fitch, Moody's, S&P

Commercial banks operating in Poland also made predictions on GDP growth in 2020. In the report were used prediction of four banks operating on polish market, whose capital comes from different countries: Poland, France, Germany and US. In theirs forecasts we see, as in rating agencies projections, considerable differences.

Table 3
2020 GDP forecasts of chosen banks operating in Poland

	Credit Agricole	*Pekao SA*	*mBank*	*Citi*
GDP change (% YoY)	***-3.8***	***-4.4***	***-4.2***	***-5.0***

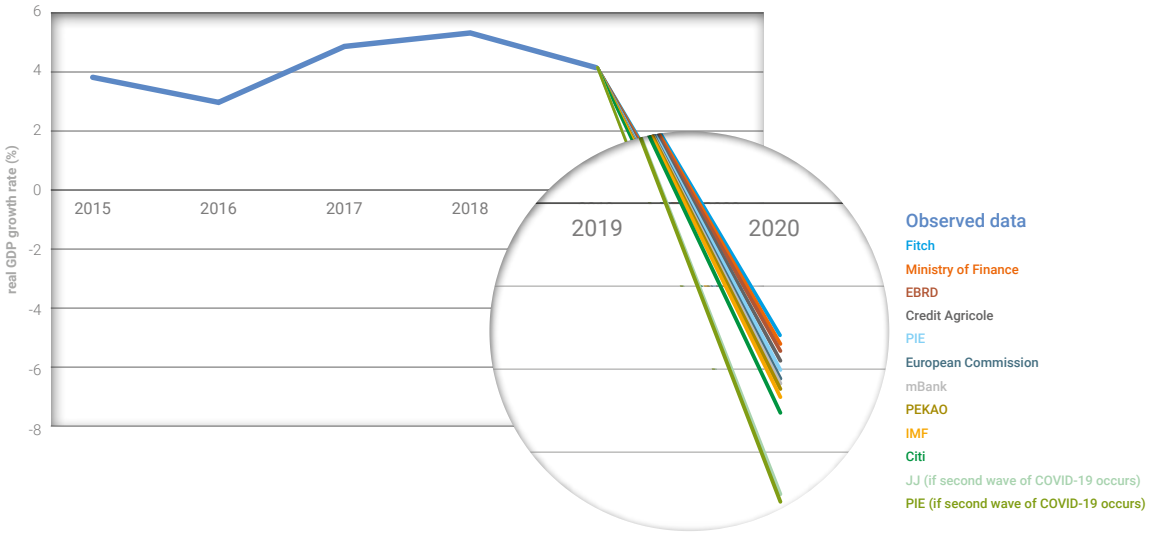
Source: Credit Agricole, Pekao SA, mBank, Citi

In the case of these banks forecasts, it can be assumed that these differences result from different customer portfolios. The macroeconomic models used by banks is partly based on own data which comes from all customer standing assessments.

A private consulting company jj consulting developed another forecast for the scenario with second wave of COVID-19 (as did Polish Economic Institute). In such a situation jj consulting company forecasts a decrease of 7.0% YoY, in line with PEI predictions.

Presented set of forecasts shows large discrepancies in the assessment of the impact of COVID-19 on Polish economy in 2020 without the second wave. Minimal decrease equalled 3.2 percent (Fitch), while the maximum reached 5.0% (Citi).

Figure 5
Impact of COVID-19 on economic growth – forecasts of different institutions



Source: Own elaboration based on forecasts of EC, EBRD, IMF, Ministry of Finance, Fitch, commercial banks, Polish Economic Institute, JJ consulting company

The baseline scenario for Polish economy for that report has been calculated as the average of all presented forecasts (interestingly equalled to the median). Average GDP decrease in 2020 is predicted at 4.0%. This is an starting point for all other assumptions i.e. for changes on labor market, public finances, number of pensioners, etc. All of which are the basis for NFZ's revenues forecast.

2.2. Assumptions to particular economic scenarios

The NFZ revenues come mainly from contributions of working population, unemployed (paid by public money) and pensioners. As the current crisis affects the level of employment and wages, the tendency to retire and businesses closure it also affects NFZ revenues. Therefore, economic scenarios for these areas are needed to calculate possible revenue loses in NFZ budget.

The developed economic forecast main assumptions are:

1. Real GDP decrease in 2020: 4.0 %.

2. GDP deflator: 3.0%, implying a nominal GDP decrease of ca. 1.0%.

3. Changes in employment, unemployment and wages were based on trends observed in 2008-2009 crises and, mainly, on the situation on the labor market during the second quarter of 2020 r. Additional data have been taken from media information about expected by the government decrease in employment (190 thousand full-time jobs), increase in unemployment by 415 thousand (about 45%), nominal wage increase by 3% and real wage increase by 0,15% with inflation of 2.8 percent. These assumptions are the basis for baseline scenario (S1).

4. Additional scenarios for one COVID-19 wave (S2–best-case and S3-mildly pessimistic) assume deviations from the baseline scenario by +/- 20 percent.

5. The fourth scenario concerns the situation with the second COVID-19 wave in autumn 2020 (S4–worst case). It based on two previously presented forecasts (PEI and jj consulting). In this scenario it was assumed that since the decrease in GDP relative to the baseline scenario (S1) is 75 per cent, all other indicators will also be adjusted by 75 percent compared do S1.

6. All scenarios indicators show the expected changes in relation to theirs levels in the end of 2019 or the average in 2019.

Table 4
Economic assumptions for particular scenarios

Indicator	*Unit, type*	*S1 (Baseline)*	*S2 (Best-case scenario)*	*S3 (Mildly pessimistic scenario)*	*S4 (Worst-case scenario)*
Real GDP	*%, change*	*-4.0*	*-3.2*	*-4.8*	*-7.0*
GDP deflator	*%, change*	*3.0*	*3.6*	*2.4*	*0.8*
Government consumption	*%, change*	*2.9*	*2.3*	*3.5*	*5.1*
Employment in national economy	*%, change*	*-6.0*	*-4.8*	*-7.2*	*-10.5*
Employment in companies 10+	*%, change*	*-5*	*-4*	*-6*	*-8.8*
Unemployed (number)	*%, change*	*40*	*32*	*48*	*70*
Wages in national economy	*%, change*	*1.0*	*1.2*	*0.8*	*0.3*
Wages in companies 10+	*%, change*	*3.0*	*3.6*	*2.4*	*0.8*
ZUS pensioners	*%, change*	*4.0*	*3.2*	*4.8*	*5.2*
KRUS (farm) pensioners	*%, change*	*-1.0*	*-1.2*	*-0.8*	*-0.8*
Central governement deficit	*bln PLN, level*	*190*	*190*	*290*	*350*

Source: own elaboration

Additional assumptions to S1, and subsequently to the other scenarios are enumerated below:

- *Government consumption:* decline in dynamics is not predicted as there are costly government anti-crisis programmes that are currently carried out. This assumption is in line with external forecasts.
- *Employment in national economy:* in 1q2020 the number of people working in national economy decrease by 40 thousand. Experience of 2008-2009 shows that the decline grew in the following months; current signals indicate that relatively large cuts in employment are expected in the public sector.
- *Employment in companies employing 10 and more employees:* employment in 10+ companies fell by 3.7 percent in April and May compared to March 2020. In the following months the decline will slightly increase. How-

ever, it must be remembered that micro-companies can experience higher decline, thus the overall official employment fall may be stronger.

- *Unemployment:* GUS data (BAEL) show that the number of unemployed increased by 8.8 percent (compare to 4q2019). The research „Diagnosis of the situation on the labor market" shows that in April the number of people who lost their jobs increased by 660k (up to 1.5 million), of which only 20% registered as unemployed, but are predicted to register in the following months.
- *Wages in national economy:* experience in 2008-2009 shows that remuneration in national economy increased, but at a slower pace than in companies employing more than 10 people. Signals from the government indicate a possible cuts or stagnation of wages in the public sector. The employment structure may change, however people with higher qualifications will remain in employment. It should be assumed that, on average, wages may increase slightly.
- *Wages in companies employing over 10 people:* salaries fell by 6.7 per cent in May compared to March 2020; experience in 2008-2009 shows that salaries may increase slightly by the end of the year.
- *ZUS pensioners:* increase in the number of pensioners will stem from an escape from unemployment, as well as from the lack of increase in capital valorization. However, in case of the second COVID-19 wave, this mechanism will not take place. The criteria of retirement and pension will limit such possibility.
- *KRUS pensioners:* the weakening of the economy will not impact the number of KRUS pensioners. Rather a natural tendency to decrease the number of pensioners will be observed, even in case of the second COVID-19 wave in autumn.
- *Central government deficit:* Convergence Programme update predict 8.4% budget deficit (i.e. 190 bln PLN). This level of budget deficit will not changed in S2 scenario, but increase due to additional public expense connected to anti-crisis programs in S3 and S4 scenarios.

2.3. Healthcare contribution forecast methodology

The healthcare contribution forecast is based on a bottom-up approach involving the use of detailed breakdown of health contribution revenue by different contributor types, which has been obtained by the authors directly from NFZ. The dataset covers the period from 2013 to 2019 and includes total revenue values for 75 different titles for health insurance coverage. These have been aggregated to 9 broad categories of titles, representing main types of contributory status:

- Employees
- Civil contract workers
- Self-employed
- Unemployed
- ZUS pensioners
- Uniformed services

- Other ZUS contributors
- KRUS pensioners
- Active KRUS farmers

Employees represent the largest group of economically active population. It includes only those, who have a labour-law-type contract, regardless of duration status (open-ended and fixed term).

Civil contract workers category represents those, who perform any kind of paid work that does not fall under labour law regulations. It includes primarily contractors on assignment (umowa zlecenie). While the degree of social security coverage of this type of workers is partial and its extent depends on several factors, such as the number and value of contracts, health contribution coverage is universal and unconditional. This group includes temporary workers with atypical employment contracts, as well as labour-law-employees who use these contracts to generate additional income.

Self-employed group is composed of entrepreneurs who are obliged to pay health contribution. This includes mostly small business, but also some of the owners and co-owners of incorporated entities.

Unemployed group includes persons legally registered as such by municipal Labour Bureaus. Health coverage is provided to every unemployed person, irrespective of meeting the criteria for benefits. The health contributions are financed by the state through Labour Fund.

ZUS pensioners category is composed of beneficiaries of old-age, disability and survivors' pensions paid by the Social Insurance Institution (Zakład Ubezpieczeń Społecznych, ZUS). It includes pensioners from the universal social security system, as well as from particular systems serviced by ZUS (miners, teachers, railroad workers). Persons receiving pre-pension benefit, which is awarded to unemployed nearing retirement age, are also taken into account.

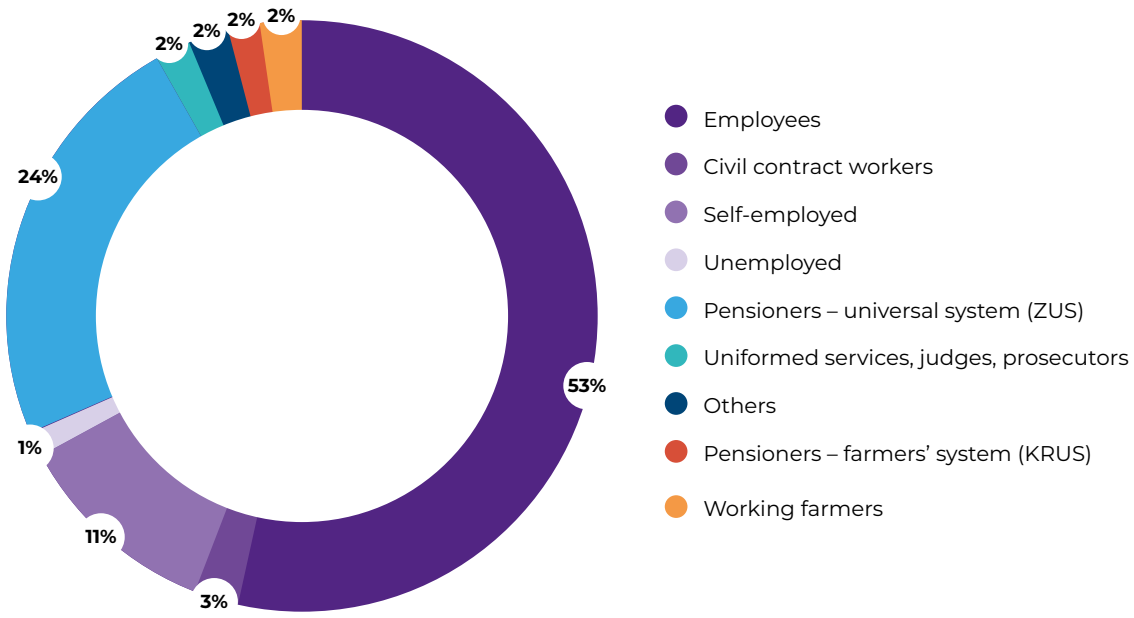
Uniformed services category includes members of military, police, intelligence, prison, internal security, border guard and anti-corruption services, whose social and health contributions are funded through ministry-based schemes. While not a part of uniformed service, judges and prosecutors have also been added to this group, since their insurance is provided in a similar manner by the Ministry of Justice.

Other ZUS contributors group includes a wide variety of less common health insurance titles, such as special stipend beneficiaries, clergy, workers during childcare leave or supervisory boards' members. These groups have little in common, although most of them are related to the social benefits rather than a particular type of labour market activity.

KRUS pensioners category is composed of beneficiaries of farmers' old-age, disability and survivors' pensions paid by the Agricultural Social Insurance Fund (Kasa Rolniczego Ubezpieczenia Społecznego, KRUS).

Active KRUS farmers group includes economically active farmers, as well as their helpers and persons generating income from special types of agricultural production.

Figure 6
NFZ 2019 revenue structure



Source: own calculations based on NFZ data

NFZ data indicates that approx. 71.7% of income generated from health contributions is related to income generated through employment or entrepreneurship, while the remaining 28.3% is pegged to various kinds of state and social benefits – mostly pensions. In context of COVID-19 pandemic this revenue structure indicates that only partially the changes in NFZ contribution inflows will be determined by labour market dynamics, while state policy regarding benefits will also have a significant impact.

Another interesting conclusion which can be drawn from the initial analysis of NFZ dataset is the disparity between the levels of average monthly contribution. Atypical contract worker generates, on average, only a third of the contribution of the regular contract worker – although it has to be noted that having a multitude of civil contracts by a single person is not uncommon in Poland. Furthermore, an unemployed person generates a contribution of only a sixth of an average employee. Interestingly, self-employed on average contribute more to the public healthcare system than employees, which contrasts with popular view that entrepreneurs in Poland are paying relatively small contributions. It is also worth noting that an average pensioner from universal system generates a contribution that is almost twice as large as the pensioner from farmers' system. However, by far the largest contribution per title is attributed to the members of uniformed services, judges and prosecutors group.

Table 5
Healthcare contribution total, average and number of insurance titles in 2019

	Health contribution revenue, 2019, m PLN	*Number of health insurance titles, 2019, thousands*	*Average monthly contribution, 2019, PLN*
Employees	***46948.5***	***11753.7***	***332.86***
Civil contract workers	***2727.8***	***2209.0***	***102.90***
Self-employed	***9590.2***	***2257.3***	***354.04***
Unemployed	***691.5***	***1005.7***	***57.30***
Pensioners – universal system (ZUS)	***21487.5***	***8782.6***	***203.88***
Uniformed services, judges, prosecutors	***2025.9***	***334.3***	***505.00***
Others	***1299.3***	***1055.0***	***102.63***
Pensioners – farmers' system (KRUS)	***1536.4***	***1132.9***	***113.01***
Working farmers	***1938.0***	***1221.0***	***132.27***
Total	***88245.0***	***29751.6***	***247.17***

Source: own calculations based on NFZ data

In order to forecast the total NFZ revenue using this detailed contribution structure, two main assumptions are required for each category: change in the number of titles, as well as change in the level of average contribution. These are based on the economic scenarios, which were described earlier. However, the economic scenarios do not provide direct reference to some of the categories of employment or benefits linked to particular type of health insurance title. Therefore, the choice of specific economic indicators, on which the revenue forecast was based, has been determined by comparing the historical correlations between observed economic data and NFZ revenue dynamics and imputed indicators in each category. This has allowed to choose the most accurate predictors from the set of forecasted economic indicators for every single revenue stream. In order to adjust for discrepancies and thereby increase the accuracy of economic indicators in predicting NFZ revenue streams, in case of some indicators, multipliers had to be applied.

It should be noted that the forecast does not account for contribution exemptions introduced as an anti-crisis measure by the Polish government, which for a period of 3 months has waived the obligatory social and health contributions in full for self-employed and companies employing up to 9 persons, and in 50% for companies employing between 10 and 49 persons. However, the revenue lost by the NFZ due to the exemption will be fully refunded by the central government budget.

For the employees, the change in the level of average contribution is based directly upon the forecasted average wage growth for the enterprise sector for each given scenario, while the change in the number of titles is linked to the change in the employment levels in the same category of economic entities.

For civil contract workers, the change in the level of average contribution is assumed equal to the wage growth in the national economy, while the change in the number of titles is pegged to the employment change in the same category but multiplied by factor of 1.5. Such an assumption reflects the expected disproportionate effect of recession upon temporary workers. In an epidemic-induced recessionary environment, the companies are most likely to lay off those employees, whose contracts are easiest and cheapest to terminate – which corresponds with the definition of civil law contracts.

For self-employed, the health contribution is calculated based on 75% of the average wage in enterprise sector in the 4th quarter of the previous way. Therefore, the level of the contribution can already be precisely determined, which allows the use of exact same values for every scenario. The only yet unknown factor is the change in the number of insured entrepreneurs. It has been assumed that its dynamics would follow changes in the employment in national economy, multiplied by factor of 0.75. It appears that the self-employed segment of the labour market will be less affected by COVID-19, due to large extent of anti-crisis support provided to it and boost in demand for self-employed workers in some sectors of the economy in lockdown environment, e.g. transport and delivery services.

The level of average contribution by the unemployed can also be calculated with large degree of accuracy, due to the fact that regulations concerning the level of unemployment benefits in 2020 have already been determined by Polish parliament in an act from June 19th, 2020. It includes an increase of standard level of monthly unemployment benefit from 881.30 PLN to 1200.00 PLN and an introduction of Solidarity Benefit (dodatek solidarnościowy) for workers who were laid off after March 15th, 2020. It amounts to 1400.00 PLN per month, is awarded for a maximum period of 3 months, and constitutes a basis for calculating health contribution, directly financed from the central government budget. Based on periods of eligibility for various benefits and their levels throughout the year, an average year-on-year increase of average unemployed benefit has been estimated at 37,2% and is consistent throughout all the scenarios. The change in the number of titles is dependent on projected increase in unemployment and ranges from 32% to as much as 70%.

The average contribution from ZUS pensioners could also be determined precisely using already available information. The level of state pensions is adjusted each year in March and is based on consumer inflation and wage growth figures from the previous year (special rules for minimum nominal sum increase of pension are also applied). Using monthly ZUS data on the level of average old-age, disability and survivors' pensions the year-on-year growth in 2020 has been determined to amount to 3%. The average number of titles is, on the other hand, linked with economic scenarios and is positively correlated with the severity of recession. Experience from previous periods of weaker economic growth in Poland shows that the worsening of labour market conditions induces workers with the right to claim retirement benefits to leave the workforce and join the ranks of pensioners. The effects of additional pension benefits (so-called "13th pensions") are already included in the statistical base from 2019, since in the previous year a similar benefit was already introduced.

Uniformed services category includes solely employees whose earnings growth depends on budgetary decisions made by policymakers. The budget bill for 2020 includes provision for an increase in civil servants' salaries by 6%. However, the anti-COVID special bill grants the state the right to revoke these raises, as well as to outright reduce their salaries. It has been assumed that in more optimistic scenarios (S1 and S2) the increase in wages will conform with original regulations. However, in less optimistic scenarios we expect this wage increases to be reduced or even foregone entirely. In terms of the number of titles, we assume it will remain unchanged since public employment, espe-

cially in uniformed services and justice system, does not follow as closely developments in overall economy. Furthermore, number of titles in this category has historically been the most stable.

Due to its heterogeneity, the revenue stream from other titles of health insurance contributors is more difficult to predict in the current circumstances than in other categories. Because of a lack of apparent link to economic variables, it has been assumed it will follow 2014-2019 trend both in terms of average level of contribution, as well as the number of titles.

Similarly to ZUS pensions, the level of contribution from farmers' health insurance has been determined from official data published after yearly increase of pensions that took place in March. The severity of recession also influences the predicted changes in the number of titles, although the effects are not as pronounced as in the case of universal pension system and even in the most pessimistic scenario they do not reverse the downward trend in the number of farmers' pensions.

Analysis of historical data concerning the NFZ revenue stream from insured working farmers does not show apparent link with macroeconomic performance. It is affected more by the prevailing trend driven by structural changes in the agricultural sector rather than the business cycle. Agriculture also appears to have been affected by COVID-19 in much different ways than different sectors of the economy. For this reason, the projections are extrapolated based on 2014-2019 trend and are consistent throughout all the scenarios.

Table 6
Average healthcare contribution and number of titles estimation

	Average contribution, YoY change					*Number of tiles, YoY change*				
	NFZ	*S1*	*S2*	*S3*	*S4*	*NFZ*	*S1*	*S2*	*S3*	*S4*
Employees	*3.0%*	*3.0%*	*3.6%*	*2.4%*	*0.8%*	*-1.8%*	*-5.0%*	*-4.0%*	*-6.0%*	*-8.8%*
Civil contract workers	*3.0%*	*1.0%*	*1.2%*	*0.8%*	*0.3%*	*-1.8%*	*-9.0%*	*-7.2%*	*-10.8%*	*-15.8%*
Self-employed	*2.4%*	*5.8%*	*5.8%*	*5.8%*	*5.8%*	*-0.1%*	*-4.5%*	*-3.6%*	*-5.4%*	*-7.9%*
Unemployed	*1.3%*	*37.2%*	*37.2%*	*37.2%*	*37.2%*	*45.7%*	*40.0%*	*32.0%*	*48.0%*	*70.0%*
Pensioners - universal system (ZUS)	*5.5%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*1.3%*	*4.0%*	*3.2%*	*4.8%*	*5.2%*
Uniformed services, judges, prosecutors	*7.1%*	*6.0%*	*6.0%*	*4.8%*	*0.0%*	*6.7%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Others	*2.8%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*0.0%*	*5.2%*	*5.2%*	*5.2%*	*5.2%*
Pensioners - farmers' system (KRUS)	*6.6%*	*8.0%*	*8.0%*	*8.0%*	*8.0%*	*-3.6%*	*-1.0%*	*-1.2%*	*-0.8%*	*-0.8%*
Working farmers	*15.6%*	*2.8%*	*2.8%*	*2.8%*	*2.8%*	*0.0%*	*-2.4%*	*-2.4%*	*-2.4%*	*-2.4%*

Source: own calculations

On June 10th 2020, NFZ has approved an updated contribution forecast, which is based on a set of economic and labour market assumptions provided by the Ministry of Finance and Ministry of Family, Labour and Social Policy. It is based on similar principles to the forecast prepared for the purposes of this report – it divides titles into several aggregated groups, to which it assigns numerical forecasts concerning expected rate of growth in the value of average contribution for each group of titles, and the number of titles.

NFZ forecasts an increase of average contribution by 3% for employees, which corresponds with this report's base scenario. It also assumes a drop of the number of employees by 1.8%, which is much lower than even in the most optimistic scenarios of this report. Furthermore, NFZ does not take into account differences between the situation of the employees and civil contract workers. This appears to be a significant omission, since workers with non-standard contracts are much more likely to experience job losses, as well as reduction in income.

The average level of contribution of self-employed seems to be underestimated. Since it has already been legally determined that the health contribution in 2020 will be 5.8% higher than in 2019, it is difficult to explain the NFZ's assumption of 2.4%. Instead, NFZ expects only a token reduction in the number of titles in this category.

NFZ also expects the unemployed contribution to increase by 1.3%, which clearly indicates it did not take into account changes in the level of unemployment benefit and introduction of Solidarity Benefit. It also predicts a very large increase in the number of unemployed, comparable with pessimistic S3 scenario. This indicates that NFZ is very optimistic about employment figures, while being very pessimistic about unemployment figures.

As for ZUS pensioners, NFZ expects much higher increase in average contribution, but at the same time far lower increase in the number of beneficiaries. For uniformed services, it expects an increase in average contribution exceeding guaranteed raise of 6%, and it also predicts increase in their numbers by as much as 6.7% in 2020.

For other persons insured in ZUS and working farmers from KRUS, NFZ assumes that their number will remain stable. However, historical trends indicate that we should expect a reduction in the number of working farmers and an increase in the number of other insured persons.

2.4. Healthcare contribution forecast

Forecast conducted in accordance with methodology described in the previous chapter, in base scenario (S1) indicates a reduction in NFZ contribution revenue by over 3.5 bln PLN (3.8%), which translates to a nominal increase in revenue in comparison with 2019 levels by by 1.2 bln PLN. In case of V- or U-shaped economic recovery from the recession, we expect that the actual revenue shortfall will range between 2.9 and 4.2 bln PLN or 3.1% and 4.5%, depending on the eventual impact of the recession labour market and the effectiveness of anti-crisis measures that were put in place, as well as overall global economic environment influenced by the pandemic. However, assuming a second wave of COVID-19 in Poland causing a double-dip recession, we forecast that NFZ revenues from contributions could drop to as low as 86.7 bln PLN – a shortfall of 6.5 bln PLN or 6.9% compared with original plan for 2020 and 1.7 bln PLN less than the revenue generated in 2019.

The overall outlook for NFZ budget is therefore significantly less negative than estimates from the beginning of the COVID-19 pandemic in Poland, indicating a reduction of contribution revenue by as much as 12 bln PLN in 2020, which did not account for the anti-crisis measures that have been since put in place.

We forecast that working population would decrease its overall level of contribution to the healthcare system due to sluggish wage growth and decreasing employment levels. The reduction attributed to the employees ranges from about 250 m PLN to 1.8 bln PLN in single pandemic wave scenarios (S1-S3) and reaches 3.8 bln PLN in scenario S4 that takes into account a second wave. In case of civil contract workers, the revenue decreases by between 166 m PLN to 275 m PLN in S1-S3, and as much as by 424 m PLN in S4. The contributions from self-employed, are however set to increase by nearly 200 m PLN in most optimistic scenario, owing to fixed predetermined level of obligatory contribution and more positive tendencies in terms of the number of titles. However, if the second wave of COVID-19 was to occur, the NFZ revenue from this source would drop by nearly 250 m PLN.

On the other hand, in our forecast the effect of reduced health contributions from employment-related titles is partially offset by the increased contributions from benefit-related titles. Most importantly, ZUS pensioners would contribute between 1.3 bln PLN and 1.7 bln (1.8 bln in case of second wave) of additional revenue. Because of enhanced benefits and significantly increased numbers, unemployed would add 561-713 m PLN in S1-S3 or 921 m PLN in S4.

Other categories have much smaller impact upon the eventual result of the NFZ revenue forecast. Uniformed services, combined with prosecutors and judges, would add up to 122 m PLN in contributions. Other groups, such as farm pensioners would have next to irrelevant impact on NFZ outlook, regardless of the economic scenario.

Comparison with NFZ forecast

In comparison, according to the latest NFZ forecast, the revenue would increase across the board in every single category, including even employees (+524 m PLN) and civil contract workers (+30 m PLN), despite the pronounced impact of the current recession on the labour market. Since NFZ wage growth forecasts are similar to ours, this difference is attributed mostly to far more optimistic assumptions regarding the impact upon the number of employed. Furthermore, NFZ treats civil contract workers exactly the same as other employees, thus not taking into account the disproportionately higher likelihood of layoffs and pay cuts in this group, that does not enjoy the degree of protection comparable to labour-law-contracts. The forecasted revenue from self-employed is also higher than in our forecast because only very marginal (less than 0.1%) reduction in the number of titles is assumed.

One very notable feature of NFZ forecast is inconsistency between the number of job losers and newly registered unemployed. Its assumptions imply that, compared with 2019, there will be 211,6 thousand less employees, 39.8 thousand less civil contract workers and 2 thousand less self-employed – which combined gives a total of 253.4 thousand net job losers. However, NFZ also assumes that the number of unemployed would increase by 45.7%, indicating a net increase in the number of unemployed persons by 459.9 thousand Therefore, the drop in the number of employed amounts to as little as 55% of predicted increase in the number of unemployed.

NFZ predicts an increase in revenue generated by unemployed by only 330 m PLN, mostly because of the fact that it didn't account for an increase in unemployment benefit and the introduction of solidarity benefit in its forecast.

On the other hand, NFZ's forecasted level of revenue generated by ZUS pensioners is relatively close to the predictions presented in this report.

In case of KRUS, NFZ predicts lower revenue increase generated by pensioners, while simultaneously much higher increase attributed to working farmers, as it does not take into account the trend in the number of titles.

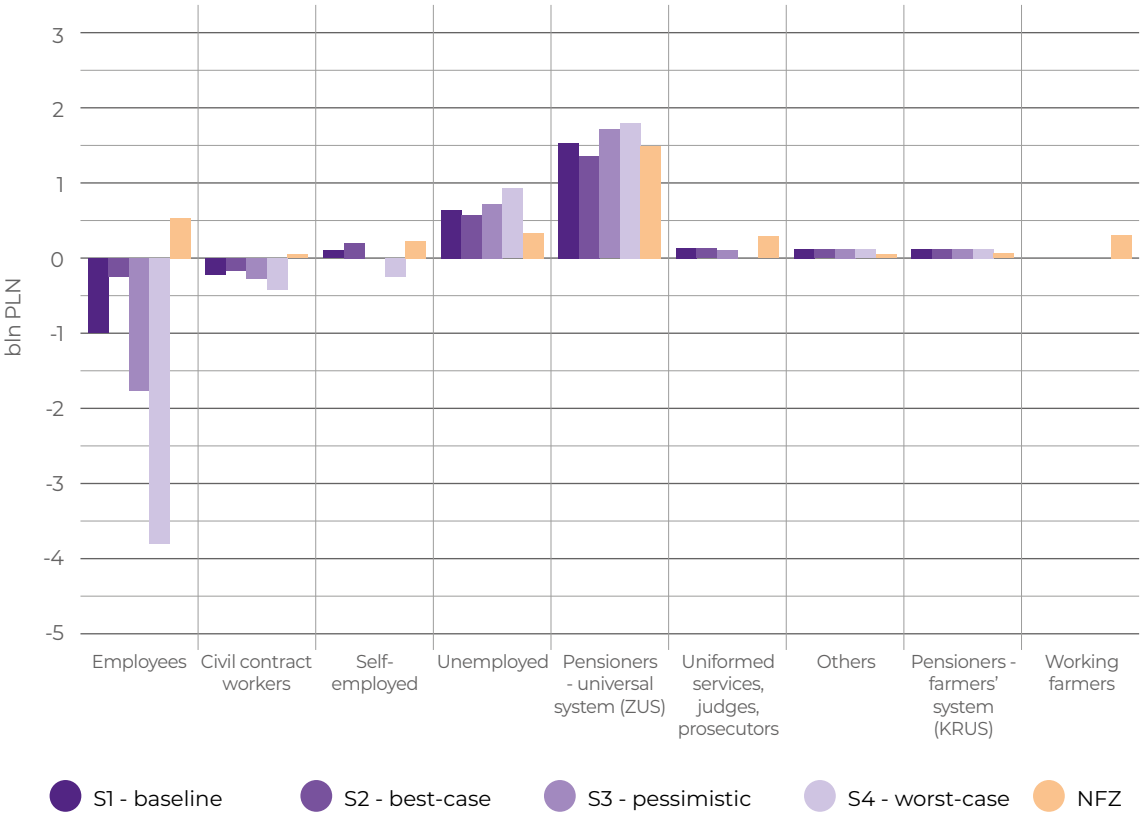
To conclude, NFZ's forecast is based on optimistic assumptions in several key areas (employment, civil servants), does not include some recent developments (hike in unemployment benefit, introduction of solidarity benefit), does not include detailed assumptions for some specific groups (civil contracts), and omits some of the existing trends (others insured in ZUS and working farmers). Therefore we believe that our forecasts provide broader picture of possible implications of COVID-19 on NFZ revenue outlook, while also presenting a scope of alternative scenarios, given the prevailing uncertainty.

Table 7
NFZ revenue forecast

	unit	actual 2019	plan 2020	update 2020	S1 2020	S2 2020	S3 2020	S4 2020
NFZ revenue								
Health contribution revenue	m PLN	88421	93158	91230	89620	90263	88957	86729
Shortfall vs original plan for 2020	m PLN			-1928	-3538	-2894	-4200	-6429
Shortfall vs original plan for 2020	%			-2.1%	-3.8%	-3.1%	-4.5%	-6.9%
NFZ revenue by contributor groups – levels								
Employees	m PLN	46949		47473	45939	46693	45191	43162
Civil contract workers	m PLN	2728		2758	2507	2562	2453	2304
Self-employed	m PLN	9590		9812	9690	9781	9599	9347
Unemployed	m PLN	692		1021	1328	1252	1404	1613
Pensioners – universal system (ZUS)	m PLN	21487		22968	23006	22829	23183	23272
Uniformed services, judges, prosecutors	m PLN	2026		2313	2147	2147	2123	2026
Others	m PLN	1299		1336	1415	1415	1415	1415
Pensioners – farmers' system (KRUS)	m PLN	1536		1579	1643	1639	1646	1646
Working farmers	m PLN	1938		2240	1944	1944	1944	1944
NFZ revenue by contributor groups – change vs 2019								
Employees	m PLN			524	-1009	-255	-1758	-3787
Civil contract workers	m PLN			30	-221	-166	-275	-424
Self-employed	m PLN			221	100	191	8	-243
Unemployed	m PLN			330	637	561	713	921
Pensioners – universal system (ZUS)	m PLN			1481	1519	1342	1696	1784
Uniformed services, judges, prosecutors	m PLN			287	122	122	97	0
Others	m PLN			36	115	115	115	115
Pensioners – farmers' system (KRUS)	m PLN			43	106	103	109	109
Working farmers	m PLN			302	6	6	6	6

Source: own calculations, NFZ data

Figure 7
Projected change in NFZ contribution revenue by source – in comparison with 2019 levels



Source: own calculations

2.5. Non-contributory revenues outlook

Non-contributory revenues have less direct impact upon healthcare spending, because allocation of these funds is a result of discretionary decisions made by policy-makers and spending in various areas is not as strongly correlated with revenue, because of changes in the structure of expenditure, as well as deficit spending.

The central budget revenue in the first half of 2020 (January-June) amounted to 197.5 bln PLN compared with 192.2 bln PLN in 1H 2019, which indicates an increase of 3%. However, this result has been skewed by the fact that it includes the payment of National Bank of Poland amounting to 7.4 bln PLN in June, while in the previous period there has been no extraordinary income of this kind. In January-May 2020 the budgetary income has decreased by 3.6%, while the expenditures rose by 11%, which caused the deficit to soar to 25.9 bln PLN – with no deficit planned in the budget bill for 2020. A significant of government's anti-crisis measures are financed through extra-budgetary funds, such as the COVID Fund and Polish Development Fund, which issue bonds amounting to up to 100 bln PLN each in order to finance their programs. The COVID Fund can be used to fund various urgent needs related to the current pandemic and has been divided into parts assigned to each budgetary section. Therefore, not only the state of central budget, but also the state of specially dedicated funds has to be taken into account to analyse the condition of Polish public finance sector.

We assume that overall deficit of general government sector will amount to 190-290 bln PLN, depending on the severity of recession assumed in the scenarios. If second wave of COVID-19 and related lockdown were to occur, it could reach level as high as 350 bln PLN.

The European Commission in its Spring Forecast predicts that total General Government revenue in Poland will amount to 40.8% of GDP in 2020, while in its pre-COVID-19 forecast it was seen at 41.8% – meaning that a drop in revenue of 2.4% in the whole year is expected, compared with previous baseline.

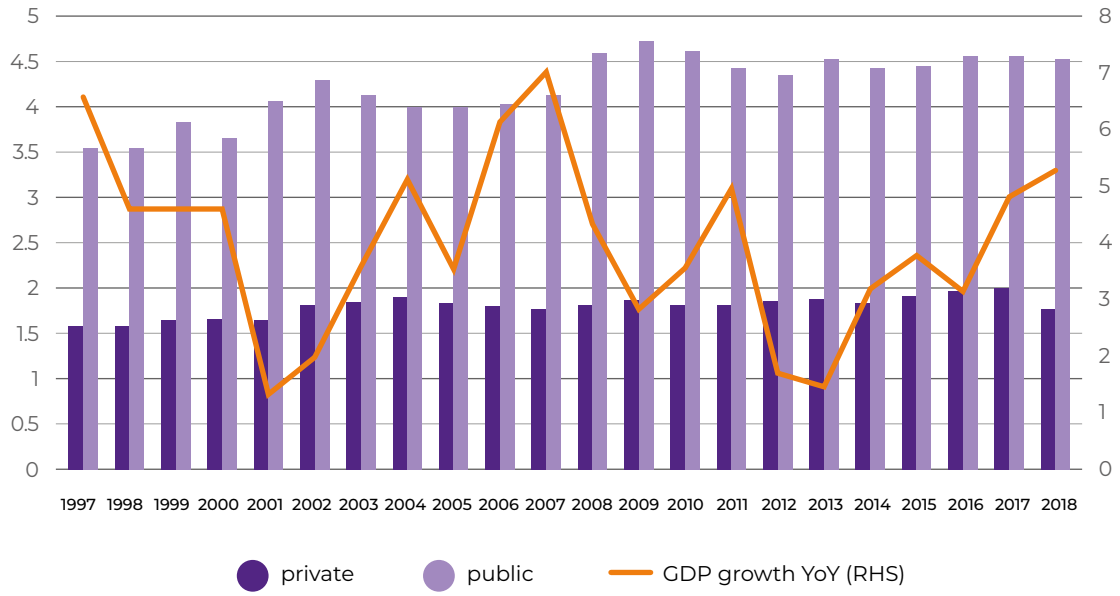
The revenues of local government are subject to even greater uncertainty. As of May, personal income tax YTD – 50.01% of which constitutes a revenue of local governments – has fallen by 8.6% compared with 2019. Another major source of their income are subsidies from central government. These may be subject to some changes as a result of pandemic and more challenging economic climate, although their extent is difficult to predict. Local governments have also reduced their income by waiving property taxes, introducing rent freezes on municipal property and introducing local tax forbearance schemes as anti-crisis measures, which will undoubtedly also have a large impact on their financial situation.

COVID-19 impact on healthcare system expenditures

3.1. Historical analysis

Looking at the Polish healthcare expenditure as a share of GDP, one can easily make a hypothesis on this indicator's inverted relation with the economic cycle. This specifically concerns the public healthcare spending and may be a result of relatively stable public healthcare costs in nominal terms, even during economic downturns.

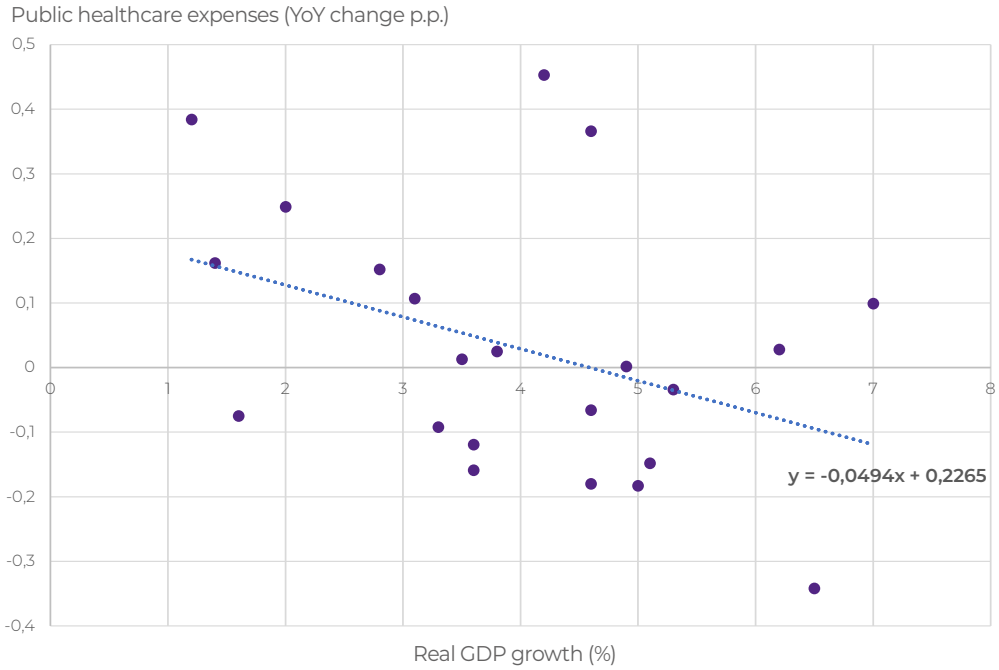
Figure 8
Healthcare expenditure in Poland (in % of GDP) and annual GDP growth.



Source: own elaboration based on Polish Statistical Office and OECD data.

To validate the hypothesis the statistical significance of the linear regression between healthcare expenses change and GDP growth numbers was analysed. The relation was significant at 8% probability value (p-value). Although this is higher than the standard level used to corroborate a hypothesis (5%) it seams that the relation is valid. Healthcare expenses in Poland increase by 0.05% GDP with every 1 p.p. drop in annual GDP growth.

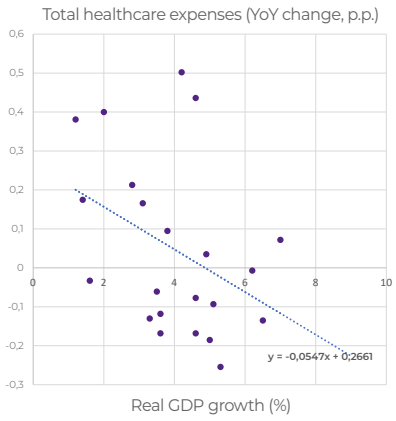
Figure 9
Relation between total healthcare expenses change and GDP growth in 1997-2018 period



Source: own elaboration

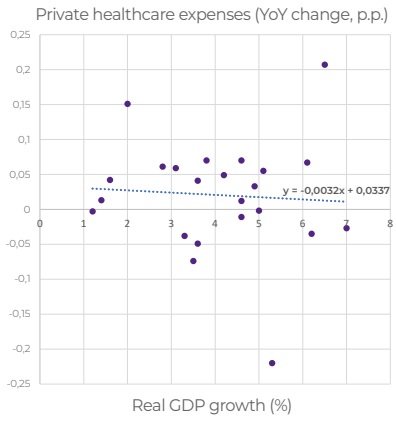
Public healthcare spending seems to fuel this relation as the linear regression for public healthcare expenses alone and GDP growth is statistically significant, also at 8% p-value. Furthermore there is no statistical significance for private healthcare expenditure. Though, it has to stated that the identified linear regression is negatively sloped.

Figure 10
Relation between public healthcare expenses change and GDP growth in 1997-2018 period



Source: own elaboration

Figure 11
Relation between private healthcare expenses change and GDP growth in 1997-2018 period



Source: own elaboration

The relatively small sample size and possible influence of individual political decisions on the relation calls for an analysis of particular downturns. In 2001 the real GDP growth decreased to 1.2% from 4.6% a year earlier. Nevertheless, healthcare contribution revenue increased from 3.15% of GDP to 3.46%. This was however an effect of increasing healthcare contribution rate from 7.5% to 7.75% and not the decoupling of healthcare

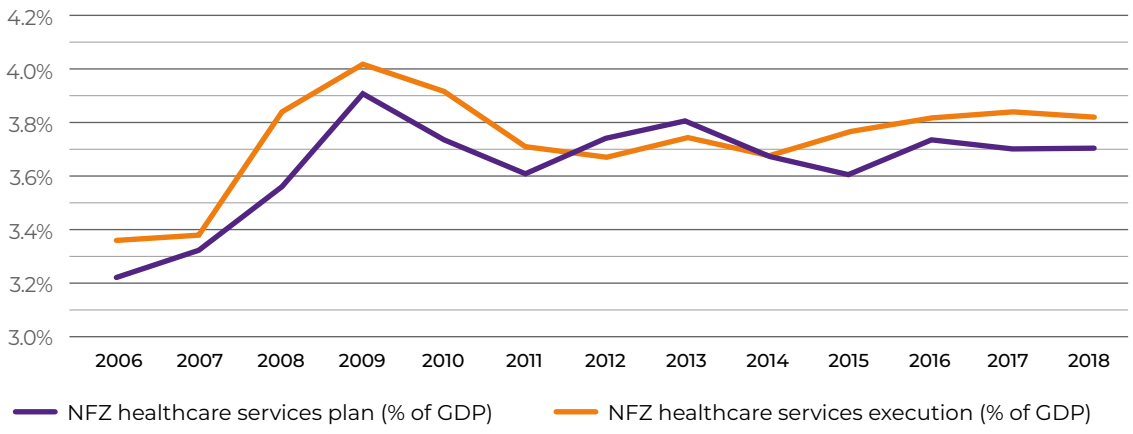
contributions from GDP growth. Healthcare expenditure grew from 3.65% to 4.03%. This enabled the Sickness Funds (predecessors of NFZ) to record an even higher profit in GDP terms than in the year 2000. In 2002 the downturn continued as GDP growth was still below potential at 2.0%. In effect healthcare revenues decreased by 0.19% of GDP. At the same time expenditure growth was continued with an increase of 0.25% of GDP, which led to a deterioration of Sickness Funds financial outcome.

The next economic downturn occurred in 2009, when the real economic growth fell from 4.2% to 2.8%. This did not produce a significant alteration (0.02% of GDP drop) in healthcare contribution. Public healthcare expenses grew at a considerably faster pace and increased by 0.15% of GDP. In result, NFZ financial stance worsened significantly, as 2008 profit of 0.09% of GDP turn into a 0.05% of GDP deficit.

During 2012-2013 period real GDP growth dropped to 1.6% and 1.4% respectively, while in 2011 Polish economy recorded an impressive 5.0% expansion. This slowdown did not lead to a significant fall in healthcare contributions in 2012 (0.02% of GDP), while in 2013 even a slight increase in contributions was recorded (0.06% of GDP). On the expenditure side, in 2012 a decrease of 0.08% of GDP was reported. However, when accounting for a new drug reimbursement bill introduced in that year, the expenditures have actually gone up by 0.04% of GDP. In 2013 the expenditure growth continued by 0.17% of GDP. This resulted in a slight deterioration of NFZ financial stance of 0.04% of GDP.

All in all, these particular downturn examples, confirm that there is little concern on keeping a balanced NFZ budget each year. It has to be emphasised that this approach does not compromise the economic stance in the long-term. Healthcare expenditures are typically kept at a higher level then the initial NFZ plan suggest and seem to be independent from the economic cycle. The negative difference between NFZ healthcare services spending execution and initial plan was only recorded during 2012-2013 period, when overall fiscal consolidation was taking place. The estimation on the new reimbursement bill may have also played its role.

Figure 12
NFZ healthcare services costs, plan vs. execution



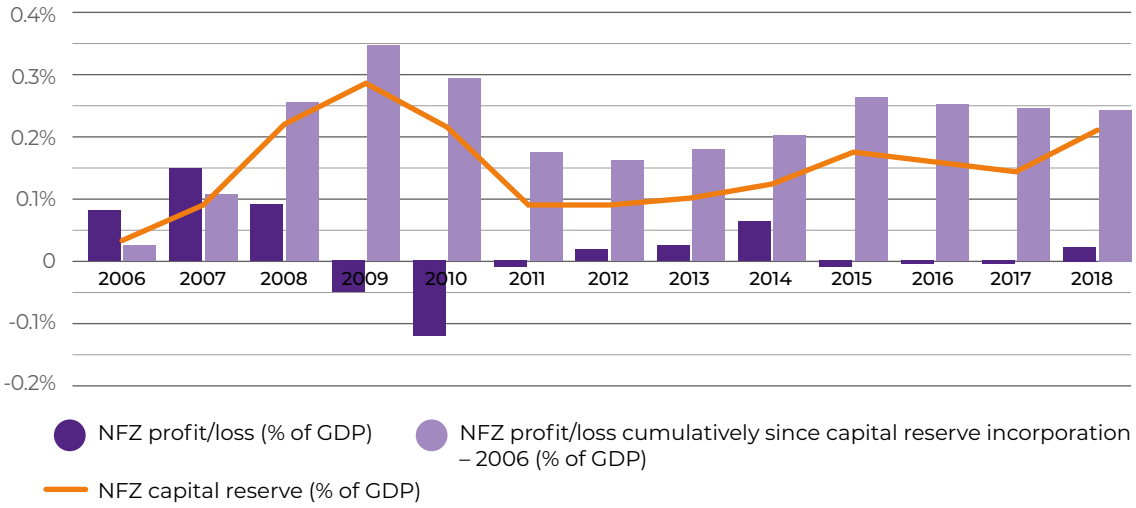
Source: own elaboration based on NFZ data.

The question of how NFZ may allow itself to not take into account the economic stance and resulting healthcare contributions drops in their spending decisions, persists. After all, as it is visible from above case study analysis, it leads to NFZ deficits that have to be financed somehow. The mechanism behind this policy is relatively simple. Since 2006 NFZ has a capital reserve that is funded by previous NFZ profits as well as payments

from the central budget, typically for specific tasks. The capital reserve functions as a financial buffer. Therefore during downturns NFZ could allow itself not to alter the expenditures and record a deficit, which is paid for from the capital reserve. This is a sound policy that has to applauded as it is a valuable countercyclical policy tool. Of course it works as long as long term economic solvency is provided. However, since NFZ incorporation the fund has proved to have a long-term balanced financial policy.

In the period 2006-2017 NFZ capital reserve was somewhat lower than the cumulative profit and loss may suggest. Nevertheless, the direction of the change in capital reserve level mimics the one of NFZ economic stance. However, in 2018 we have seen a considerable growth in capital reserve level that was not in line with NFZ's financial outcome a year earlier. This was a result of Parliament enacting a bill on increasing NFZ capital reserve by 1.8 bln PLN, with the aim of increasing healthcare services spending[8]. In 2019 this situation occurred once again. At the end of the fiscal year NFZ's capital reserved was increased by 3.0 bln PLN[9]. In result, it is highly probable to say that at the end of 2019 the NFZ capital reserve fund was at its highest level in history. This estimation withholds even after taking into account the possibility of some of the additional healthcare services being carried out using funding from the capital reserve. The capital reserve at the end of 2019, was possibly well above 0.3% of GDP. Hence, NFZ is well equipped to handle deficits implied by the revenues shortfall, predicted in the worst case scenario estimated in this publication (S4).

Figure 13
NFZ capital reserve and profit/loss



Source: own elaboration based on NFZ data.

Summarizing the above analysis, it seems that also during COVID-19 pandemic healthcare expenditures in GDP terms will not be bounded by NFZ revenues, notably lower healthcare contributions. Historically, NFZ has shown that its expenditures act countercyclical. This policy was possible thanks to a financial buffer in the form of capital reserve. The 2018 capital reserve level, 2018 NFZ profit and additional funding from the central budget suggest that at the end of 2019 NFZ capital reserve was at its highest level ever, nominally and in GDP terms. Therefore NFZ has ample resources to keep its spending independent from the lower revenue inflow.

8. Bill of 6 December 2018 (Dz.U. poz. 2383).
9. Bill of 20 December 2019 (Dz.U. poz. 2490)

3.2. Qualitative study

Beyond a shadow of doubt the coronavirus (COVID-19) pandemic is a major shock to the Polish healthcare sector and the social care system. Its impact is multi-dimensional and fluid in time. Thus it is difficult to quantify and calls for incremental adjustments as a true picture unfolds.

The structure of healthcare services has changed since the onset of the pandemic and, as a result, can influence spending patterns of public payers. National Health Fund, the local authorities as well as the Ministry of Finance, which is responsible for the central budget, will most probably adjust their healthcare financing models accordingly. Although, currently all of them, maybe with an exclusion of local authorities, declare a stable financial situation, with official plans virtually unchanged. However, COVID-19 impact on healthcare expenditure could take a direct, bottom-up form, beyond the immediate control of central institutions. This possibility should not be neglected. Already, there is a number of trends on the healthcare market that is worth noting and according to our knowledge will influence 2020 public healthcare expenditures.

Methodologically, the qualitative study, identifies and analyses these trends as well as their consequences. As part of the process, those trends have been discussed with representatives of the public payer at local and central levels, Ministry of Health, and healthcare system experts. The analysis concerns NFZ cost categories as well as central budget spendings pertinent to healthcare. Potential changes in spending directly or indirectly stemming from the pandemic have been discussed.

Inpatient care is the biggest cost category within Polish healthcare. Therefore changes observed in this field have the most gravity for the overall picture. All of the recent data suggest that this category's execution will be lower compared to NFZ plans (either April or June one). A fall in admissions was observed in the period of March to May 2020. It concerned both emergency and planned admissions. Restricted access to hospital (planned) care was additionally strengthened by a number of factors. Patients chose not to use services due to fears they might contract or transmit COVID-19, concerns about breaking the lockdown measures, or they were not aware they can get an appointment with the relevant health service. NFZ publicly declared expectation to have the loss in services rendered compensated by June 2021. This in other word means that the loss in number of medical procedures during inpatient care will be visible not only in the first half of 2020, but also in the full year. All in all, according to the forecast, level of inpatient care spendings is expected to decrease by 963 mln PLN compared to NFZ April plan. Drug reimbursement within impatient care will diminish accordingly (by 94 mln PLN). In June NFZ published its new plan that seems to account for the full effect of the pandemics. The predicted inpatient care expenditures for 2020 are expected to be 1343 mln PLN higher then in the April plan, while drug reimbursement within this category wil remain broadly unchanged. The expected growth in hospital care can be only explained by the fact that the initial NFZ plans are typically lower than the execution. Though according to our expert knowledge this effect, as in the 2012-2013 period, will not take place this year. The lower inpatient care cost in comparison to NFZ's plans does not mean that this category will fall year on year. This cost category's annual rate of growth will reach 2.2%, in comparison with 4.3% assumed in the April plan and astounding 7.2% predicted in the June plan.

There is a number of other NFZ's cost categories that are expected to fall due to COVID-19. Reimbursement costs are expected to decrease as a result of a lower number of prescriptions in open pharmacies (a drop in sales was visible in April and May 2020)

and lower inclusion to drug programmes (mainly due to patients behaviour but also but also because of reduced supply of services.

Sanatorium treatments are the obvious victim of the pandemic as their typical patient is an elder person, therefore prone to infection. Therefore even after the sanatorium treatment lockdown, these types of activities are expected to be limited. In effect their costs are expected to fall by 40 mln PLN.

Dental services are also expected to be curbed to some extent. Their costs will be cut by predicted 88 mln PLN, as the amount contracted by NFZ are lower than expected.

Co-ordination and cross-boarder services expenditures are expected to drop due to lower trans-border mobility. However, as those categories are relatively small, the combined decrease will amount only to 39 mln PLN.

Other cost categories that may see a drop due to COVID-19 are healthcare services contracted separately and nutritional substances. This decrease will be mainly a result of lower number of overall visits and prescriptions.

Some healthcare services expenditures are politically and/or socially sensitive so they are not expected to alter significantly in terms of level of financing. This group includes basic healthcare services/primary/GP care that is not expected to change compared to NFZ's April forecast, while the July forecast predicts a slight decrease.

Outpatient care and rehabilitation services could remain stable but are hard to predict. Medical transport and preventive healthcare (mainly due to NFZ priorities) are not expected to be reduced. Hospice and palliative care will remain constant despite pandemic.

There are certain cost categories which can increase as a result of COVID-19 pandemic. Psychiatric and addiction treatment is one example of such category. Experts unanimously predict that the lockdown and COVID-19 scare that has plagued the society has resulted in worse overall psychological conditions. According to the forecast psychiatric and addiction treatment will increase by 138 mln PLN, compared to the April plan.

Another category that is expected to grow in cost terms is emergency medical treatment. As less patients decided to use the typical route of consulting a doctor (especially the elderly during lockdown) there is more need of acute care. Forecasted increase of this cost category equals 147 mln PLN, while NFZ's June plan predicts 110 mln PLN spendings growth.

Table 8
NFZ expenditure forecast and comparison with NFZ plans

NFZ expenditure category	*unit*	*April 2020 plan*	*2020 forecast*	*2020 forecast -April 2020 plan*	*June 2020 plan*	*June 2020 plan - April 2020 plan*
Third party services:	***mln PLN***	***97510***	***96507***	***-1003***	***98890***	***1380***
NFZ Healthcare services costs, including:	***mln PLN***	***93384***	***92178***	***-1206***	***94662***	***1278***
Basic healthcare services/ Primary care	***mln PLN***	***12503***	***12503***	***0***	***12498***	***-5***
Outpatient care/ Specialized care	***mln PLN***	***5698***	***5698***	***0***	***5742***	***44***

Inpatient care/ Hospital care, including:	***mln PLN***	***48163***	***47199***	***-963***	***49506***	***1343***
Drugs and particular nutritional substances reimbursed for drug programmes' purposes	***mln PLN***	***4249***	***4198***	***-51***	***4283***	***34***
Drugs reimbursed for chemotherapy purposes	***mln PLN***	***761***	***718***	***-43***	***733***	***-28***
Psychiatric care and addiction treatment	***mln PLN***	***3453***	***3591***	***138***	***3372***	***-80***
Rehabilitation	*mln PLN*	*3066*	*3066*	*0*	*3049*	*-17*
Care and caring benefits	*mln PLN*	*1950*	*1950*	*0*	*1964*	*13*
Palliative and hospice care	***mln PLN***	***824***	***824***	***0***	***826***	***1***
Dental care	*mln PLN*	*1958*	*1870*	*-88*	*1951*	*-7*
Sanatorium treatment	*mln PLN*	*800*	*760*	*-40*	*802*	*2*
Emergency assistance and sanitary transport	*mln PLN*	*258*	*258*	*0*	*266*	*8*
Costs of prevention (NFZ's own programmes)	*mln PLN*	*273*	*273*	*0*	*268*	*-5*
Healthcare services contracted separately	***mln PLN***	***2379***	***2343***	***-36***	***2391***	***12***
Medical devices	***mln PLN***	***1266***	***1266***	***0***	***1254***	***-12***
Reimbursement	***mln PLN***	***8913***	***8734***	***-178***	***8974***	***61***
Coordination costs	*mln PLN*	*719*	*683*	*-36*	*719*	*0*
Cross-border healthcare costs	*mln PLN*	*50*	*47*	*-3*	*50*	*0*
Healthcare policy programmes co-financing	*mln PLN*	*21*	*21*	*0*	*16*	*-6*
Healthcare services under pilot programmes	*mln PLN*	*586*	*586*	*0*	*596*	*10*
Residual	*mln PLN*	*504*	*504*	*0*	*419*	*-85*
Other healthcare services costs	*mln PLN*	*?*	*58*	*0*	*0*	*?*
Health policy programmes	***mln PLN***	***?***	***3***	***0***	***0***	***?***
Medical emergency services	*mln PLN*	*2258*	*2405*	*147*	*2369*	*110*
Particular nutritional substances financing	***mln PLN***	***836***	***832***	***-4***	***836***	***0***
Other third party services (residual)	*mln PLN*	*1032*	*1032*	*0*	*1024*	*-8*

Source: own calculations, NFZ.

Anti-COVID-19 protective measures measures cover, but are not restrictive to: hospital/ outpatient/population-based level infections control, personnel protection, prevention, and testing. All above were directly financed from the central budget in accordance with two bills enacted by the Parliament[10]. This means that COVID-19 impact on NFZ expenditures is limited to direct effects. Direct effects will be visible in the central budget healthcare expenditures.

Those direct effects were predicted jointly, basing on the information disclosed to the public opinion by the policy-makers[11,12]. In the forecast we have assumed that the sec-

10. Bill of 2 March 2020 (Dz.U. poz. 374) and bill of 31 March 2020 (Dz.U. poz. 568).
11. https://pulsmedycyny.pl/prezes-nfz-koronawirus-zmienil-system-ochrony-zdrowia-czesc-rozwiazan-zostanie-i-bedzie-rozwijana-989935
12. https://www.politykazdrowotna.com/56317,prezes-nfz-dla-polityki-zdrowotnej-min-o-budzecie-funduszu-w-zwiazku-z-epidemia-koronawirusa

ond wave of the pandemic will not materialized and that the infection rate will gradually fade out until the end 2020. These kind of assumptions are highly uncertain, however we believe that currently they are the most probable scenario. In result the total direct cost of measures aimed against COVID-19 for the central budget will amount to 774 mln PLN.

Among indirect COVID-19 effect visible in the central budget, selected healthcare policy programmes, will see lower level of expenses. On the other hand medical emergency costs, analogously to NFZ's medical emergency services costs, will record a slight drop.

Table 9
Central budget healthcare expenditure forecast

Central budget healthcare expenditure category	*unit*	*2019 execution*	*2020 plan*	*2020 forecast*	*2020 forecast -2019 execution*	*2020 forecast -2020 plan*
Central budget healthcare expenditures	***mln PLN***	***6369***	***3211***	***7143***	***774***	***3932***
General hospitals	*mln PLN*	*2*	*31*	*2*	*0*	*-29*
Clinical hospitals	*mln PLN*	*455*	*589*	*455*	*0*	*-134*
Care and treatment facilities	*mln PLN*	*12*	*11*	*12*	*0*	*1*
Psychiatric treatment	*mln PLN*	*73*	*74*	*74*	*0*	*0*
Outpatient care	*mln PLN*	*3*	*2*	*3*	*0*	*0*
Sanitary inspection	*mln PLN*	*42*	*44*	*42*	*0*	*-2*
Pharmaceutical Inspection	*mln PLN*	*25*	*37*	*25*	*0*	*-12*
Chemical Substances Inspection	*mln PLN*	*5*	*5*	*5*	*0*	*0*
Agency for Health Technology Assessment and Tariff System	*mln PLN*	*60*	*65*	*60*	*0*	*-5*
Medical emergency	*mln PLN*	*201*	*161*	*212*	*11*	*51*
Public blood service	*mln PLN*	*94*	*103*	*94*	*0*	*-9*
Medical emergency support system	*mln PLN*	*31*	*38*	*33*	*2*	*-5*
Occupational medicine	*mln PLN*	*1*	*1*	*1*	*0*	*0*
Health policy programmes	***mln PLN***	***927***	***1045***	***913***	***-14***	***-132***
Highly specialized services	***mln PLN***	***521***	***222***	***521***	***0***	***300***
AIDS prevention and treatment	*mln PLN*	*7*	*6*	*7*	*0*	*0*
Drug addiction prevention and treatment	*mln PLN*	*10*	*10*	*10*	*0*	*0*
Counteracting alcoholism	*mln PLN*	*7*	*7*	*7*	*0*	*0*
Healthcare contributions for those not obliged to pay it themselves	*mln PLN*	*?*	*?*	*1*	*0*	*0*
Other activities	*mln PLN*	*3894*	*759*	*3894*	*0*	*3135*
Additional expenditure as a result of COVID-19-related acts (from 2 March and 31 March)	***mln PLN***	***0***	***0***	***774***	***774***	***774***

Source: own calculations, NFZ.

To sum up, the NFZ healthcare services expenditures are predicted to fall by 1.2 bln PLN. Most of the change is due to the decrease in inpatient care, the biggest cost category (869 mln PLN without reimbursement categories). The second biggest fall in expenditures will concern drug reimbursement categories. Jointly they will decrease by 273 mln PLN. Other categories that will see a drop in expenditures are dental care, sanatorium treatment coordination costs, cross-boarder healthcare costs, nutritional substances and healthcare services contracted separately. However their total effect will amount to 207 mln PLN.

On the other hand there is a number of categories that are expected to increase in result of COVID-19 pandemic. This concerns psychiatric treatment and medical emergency services which are predicted to increase by 285 mln PLN.

The rest of the cost categories are either socially and politically sensitive (e.g. basic care), difficult to predict (e.g. outpatient care) or broadly unaffected by the pandemic (e.g. care and caring benefits).

The above considerations concern only indirect COVID-19 effects as it is the central budget that bears the financial brunt of the pandemic. The total direct costs are predicted to amount to 774 mln PLN, while indirect effects of COVID-19 for central budget are minuscule.

Actual expenditure will be impacted by political decisions based primarily on the epidemiological situation. One can hope that in the upcoming autumn season health care will not be frozen, as with the first spring shock and healthcare providers will welcome all patients following procedures that guarantee safety for both patients and medical staff. This change in the functioning of healthcare, so much desired by patients, will change the amount of expenditure in individual categories included in both tables.

3.3. Public healthcare system trends since the onset of COVID-19 pandemic

Main trends on the pharmaceutical market are difficult to predict. Less visits in primary care and specialized care may lead to less prescriptions,. This will surely differ by specialty, for instance, with more prescriptions in depression treatment. As a result of less patients visiting hospitals, lower number of patients are covered by drug programmes, either at inclusion or during a continuation phase. Considering innovative treatments one have to take into consideration the fact, that two reimbursement lists in 2020 are „missing" with most probably no option to catch up. At the same time, specialists, similarly to GPs, will begin prescribing medicines from 75+ list. With a lack of complete IT controlling system its use may rise costs. There is also a potential financial impact of C+ list dedicated to pregnant women, which is however not significant.

At more macroeconomic level, more incentives for local production and supply chain may be created including promotion of an idea of a local API manufacturing. It would be not only European, but also Polish approach after experiences with drugs' shortages.

Looking at the general tendencies in the COVID times we may expect further focus on public health including proper individual behaviour defined by (public) educational efforts. With many healthcare services shifted to tele-medicine and e-solutions more co-ordination in healthcare sector can be expected amplifying a patient-centred

approach. There has been a corresponding increase in the number of people who were consulted by telephone without needing to be transported to hospital. In general a wider use of e-health solutions including e-prescription, e-visits, e-referral, and others was observed. Despite it there are growing concerns about the impact of the COVID-19 outbreak on the health care needs of those with longer-term health conditions. The outcomes of this phenomenon can have short- and long-term clinical consequences. In a short run a moral hazard may have been reduced, some unnecessary services may not have been provided making the system more cost-effective. Higher mortality was not confirmed but long run consequences including impact on queues is unknown. In the future it may result in higher spending needs. Interestingly, surveillance reports suggest the country prevalence of certain infectious diseases has fallen as an indirect result of anti-COVID-19 protective measures.

Looking from a slightly longer perspective the new hospital network contracting rules in 2021 will be essential (to be introduced in 2020). What would be a lump sum payments level vs. a number of services delivered (until 06/2021 as a compensation for 2020 and later)? How a hospital debt would be addressed? Will reforms aimed at reduction of number of beds (and hospitals) be continued or abandoned as it saved Poland from the scarcity of inpatient healthcare resources in an acute phase of epidemic? Would a currently marginal role of a private hospitals sector re-defined? And last but not least, what would be the relationship between county/regional hospitals and clinical/teaching hospitals and institutes in terms of level of financing? One can assume that in priority areas like oncology – centralization of diagnostic and treatment services based on biggest oncology centres and hospitals will be promoted and coupled with extra funding.

Taking the European perspective, the unprecedented coronavirus pandemic clearly demonstrates the need to modernize the way the EU ensures access to medicines for its population. It shows the scale of the necessary and coordinated public health responses that are required to tackle such kind of pandemics. It demonstrates the need to have a future-proof and crisis-proof system to ensure timely access to safe, quality and affordable medicines under all circumstances. The European Commission will launch a Pharmaceutical Strategy for Europe to continue ensuring the quality, safety and efficacy of medicines and reinforcing the sector's global competitiveness. Europe should also make sure that all patients can benefit from innovation while containing the pressure of increasing costs of medicines.[13] In result many managerial practices stemmed from value-based health care may be fast tracked.

As a final conclusion, it has to be emphasized that regarding COVID-19 pandemic we are still in an unknown area. Firstly, mathematical/ epidemiological modeling predictions in terms of COVID-19 morbidity and mortality failed in Poland. Secondly, testing is still partly unreliable, especially concerning serological technologies. Thirdly, there are no anti-coronaviral drugs specifically working and there is no vaccine available. Finally, we observe many challenges with global and local leadership.

13. https://ec.europa.eu/health/human-use/strategy_en

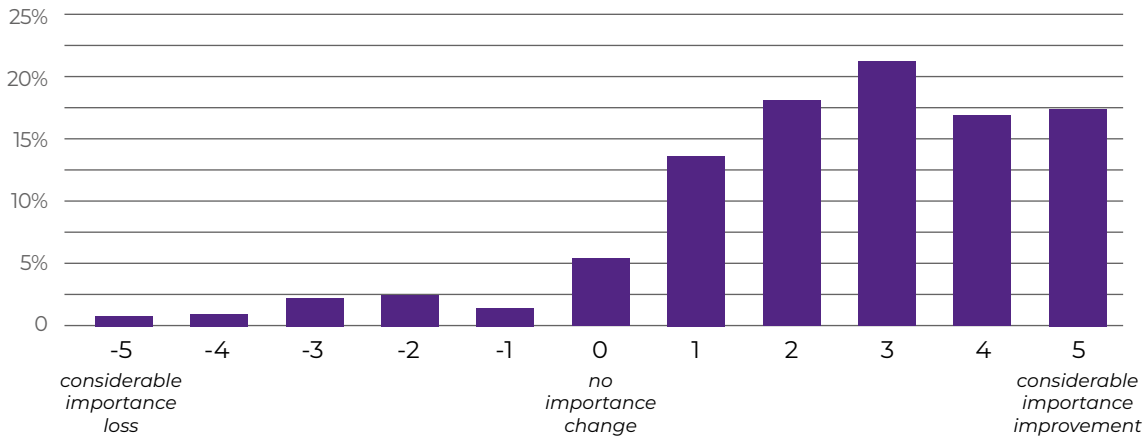
4

COVID-19 impact on Polish healthcare system perception

According to a poll answered by 1066 respondents in June 2020 the perception of healthcare system importance increased considerably in result of the COVID-19 pandemic.

87% reported an gain in healthcare importance, while ca. 55% assessed that the gravity of the matter has grown visibly. This should be no surprise, as COVID-19 quickly rose to the top of political agenda and grasped the attention of media outlets. This process was exacerbated by the comprehensive measures aimed at limiting COVID-19 spread across Poland, which resulted in a decrease in the media time devoted to other types of social and political activities. Therefore the question, whether the increase in healthcare importance perception is a long term change or only a transient fluctuation, persists.

Figure 14
In what way COVID-19 epidemic changed the way you perceive the importance of the healthcare system?

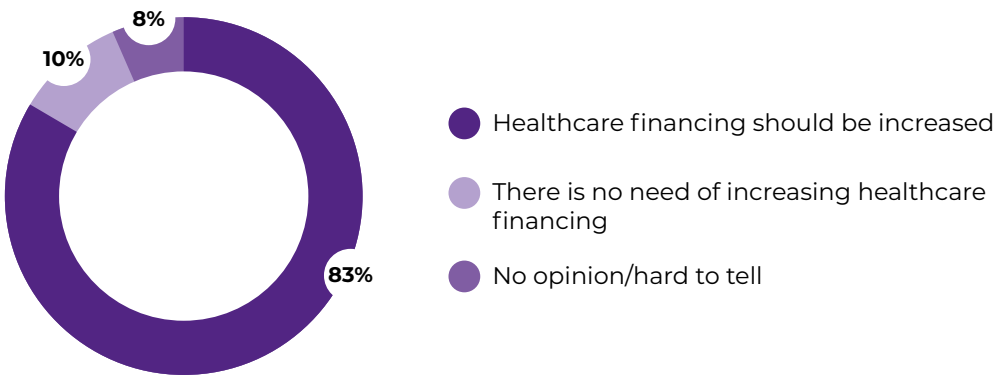


A somewhat bigger importance increases reported by those especially prone to COVID-19 may provide a hint that the effect is temporary only to a some extent. 89% of those in the highest age brackets, i.e. between 45 and 65 years old, stated that healthcare system importance has increased due to the pandemic, compared with 85% for those aged 34 or lower. 90% of respondents from the south of Poland, which includes Silesia – the region with the highest number of COVID-19 infections, stated that the healthcare importance increased, while the indicator for the rest of Poland equalled

almost 87%. The marginal differences between groups affected by the pandemics to a greater extent and the rest of the population suggest that the effect on healthcare significance growth may not be short-lived.

The rise in healthcare importance is truly immense. It begs the question whether, there is need to finance healthcare system development to a greater extent than currently. 83% of respondents offer a positive answer to this question. This number is broadly in line with the opinion on the healthcare importance growth.

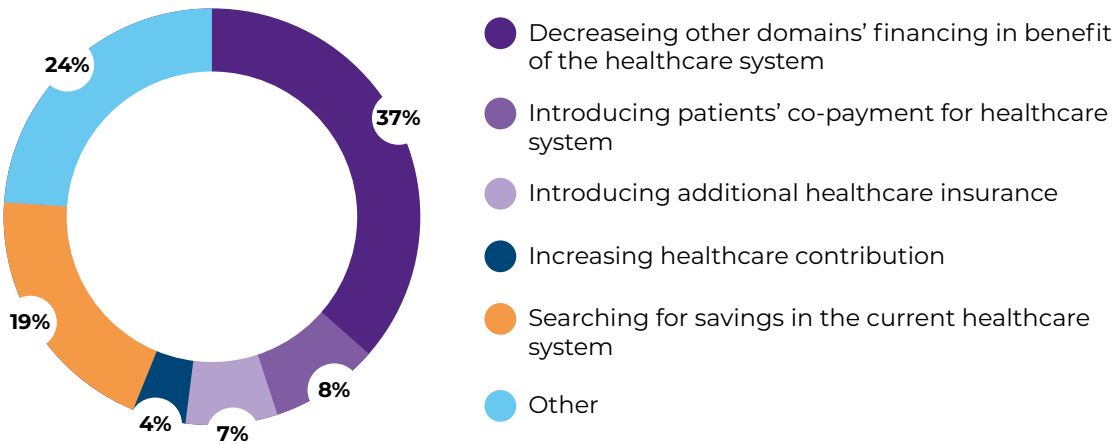
Figure 15
Do you currently see a need for increasing public healthcare system spending to assure its efficient functioning?



Interestingly, this does not mean that the problem of deficient financial resources in the healthcare sector is only an outcome of COVID-19. Answers to the consecutive question suggest that the issue was visible before the pandemic, but could have been exacerbated since its onset.

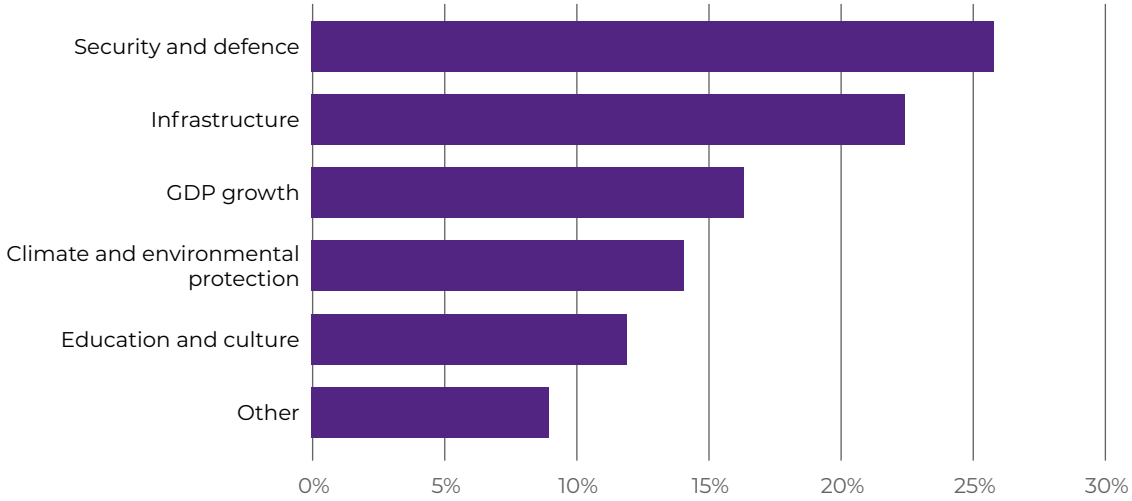
Among the pathways for increasing healthcare system financial resources, decreasing financing in other fields was the most popular answer (37% of total number of responds). Searching for savings in the system was proposed by almost 1/5th of respondents. Options directly affecting citizens' finances were not popular, with only 4% suggesting an increase in healthcare contribution. Almost 1/4th suggested other avenue for healthcare economic resources increase. Such considerable portion of unspecified answers corroborates the fact that healthcare financing is a difficult subject, with no easy answers.

Figure 16 In your opinion, how can the financing of the healthcare sector be improved?



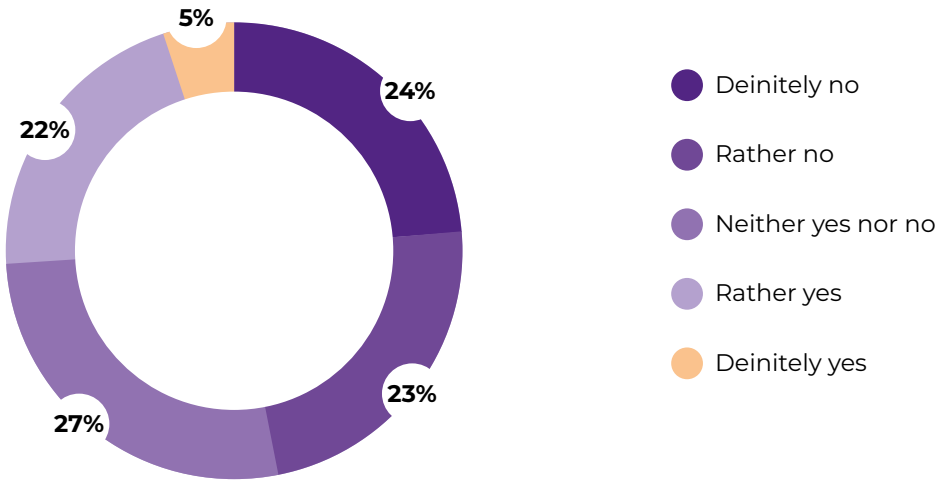
As the most popular answer for increasing healthcare financing was to cut resources in other domains, the subsequent question on which areas' importance is to be decreased. Opinions were equivocal, with security and defence (26% of all answers) as well as infrastructure (22%) being primary candidates. Interestingly GDP growth was chosen as the third option (16%), and the growing importance of climate and environmental protection did not withhold 14% of respondents to suggest it should be diminished in favour of healthcare.

Figure 17
In your opinion, which areas of the state's activity should lose their importance in favour of the growing importance of the healthcare sector?



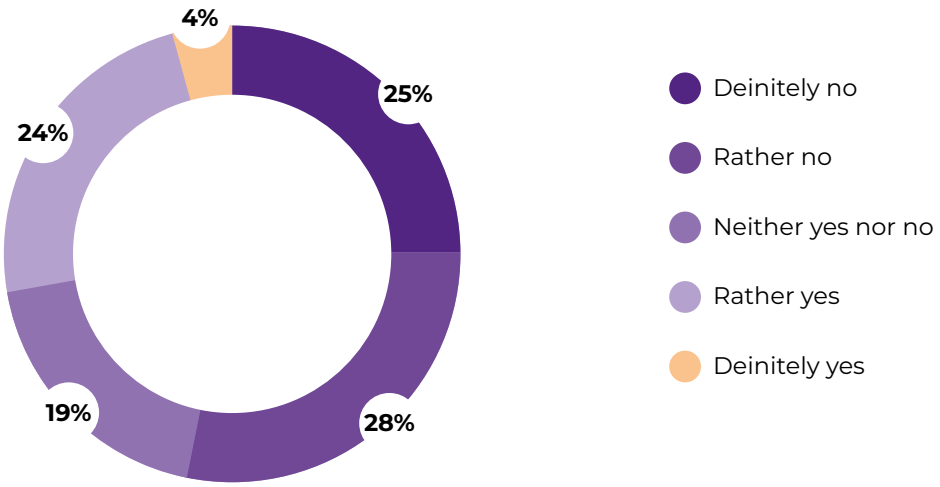
As noted previously only a minuscule portion of respondents (4%) suggested increasing healthcare contribution to aid the system. Even when asked directly about the option, only 1/4th of respondents agree that healthcare contribution should be raised, with only 5% being absolutely sure about the necessity of this measure. On the other hand almost half of all answers are against the raise, while 1/4th does not have an opinion on the subject.

Figure 18
The health contribution rate has not changed for over a decade. Do you think now is the time to raise healthcare contributions?



The reluctance to increase healthcare contribution is significant even in the times of pandemic. Additionally even in case tangible positive effects would follow with the raise it is still not easy to persuade public opinion to agree to healthcare contribution increase. Respondents who were negative to raising healthcare contribution were not keen on implementing this measure, even when it would be associated with shortening queues to receiving healthcare services ans providing therapies that were yet absent from the system. Over half of respondent did not change their mind on healthcare contribution raise implementation. Only 28% agreed that this outcomes would have convince them to support the rate increase.

Figure 19
If the increase healthcare contribution rate was associated with shortening the queues to the doctor and providing therapies currently unavailable for Polish patients, would you support the rate increase? Answers among respondents who were against raising healthcare contribution.

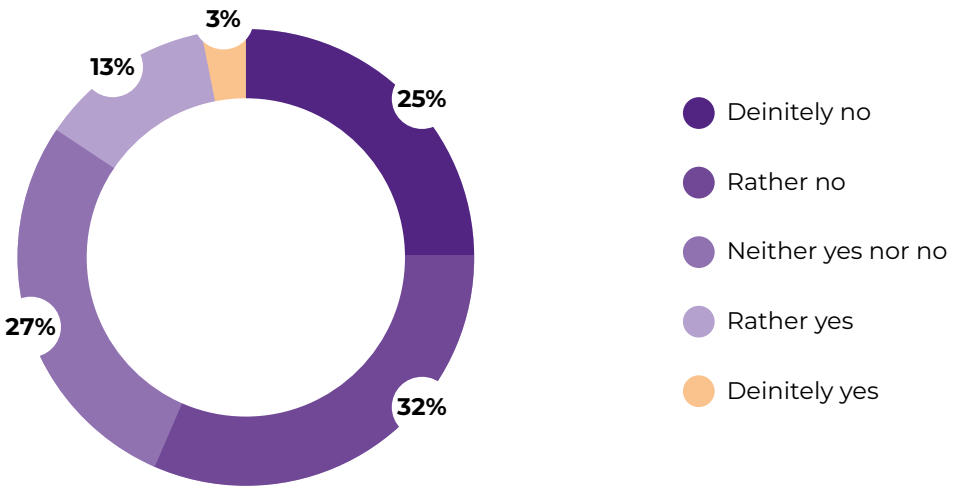


The reluctance to raise the citizen's economic burden of the healthcare system might be an outcome of already high financial barriers to healthcare services. This barriers specifically affect women, 45% of which, in recent times, have foregone necessary medical services due to their costs, while the indicator for the whole population equalled 41%.

Figure 20
Have you recently given up the necessary medical services (medical appointments, diagnostic tests, or prescriptions) because of the costs involved? Positive answers

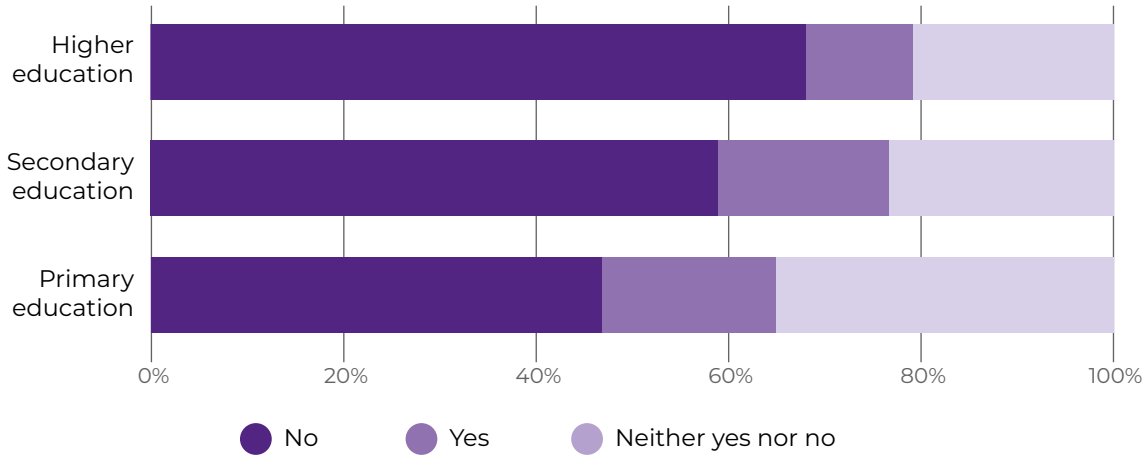
Other basic problems of the Polish healthcare system is insufficient access to medical and therapeutic innovations. 57% of respondents report that the access is occluded, while over 1/4th has no explicit opinion. Only 16% stated that innovative medical products and procedures are easily available, with as low as 3% reporting there are confident this is the case.

Figure 21
To what extent do you agree with the following statement: The Polish public healthcare system provides easy access to innovative medicines and therapies?



Interestingly, the most educated respondents are the most aware of the issue. 68% of higher-educated interviewees reported the access to innovation in healthcare is handicapped, while only 47% of those with primary education stated so. This corroborates the hypothesis on the hindered access to innovation in the Polish healthcare system as one may assume higher education goes hand in hand with broader knowledge, also on medical innovation, while those with the lowest education level may simply ba unaware of possible state-of-the-art procedures and drugs.

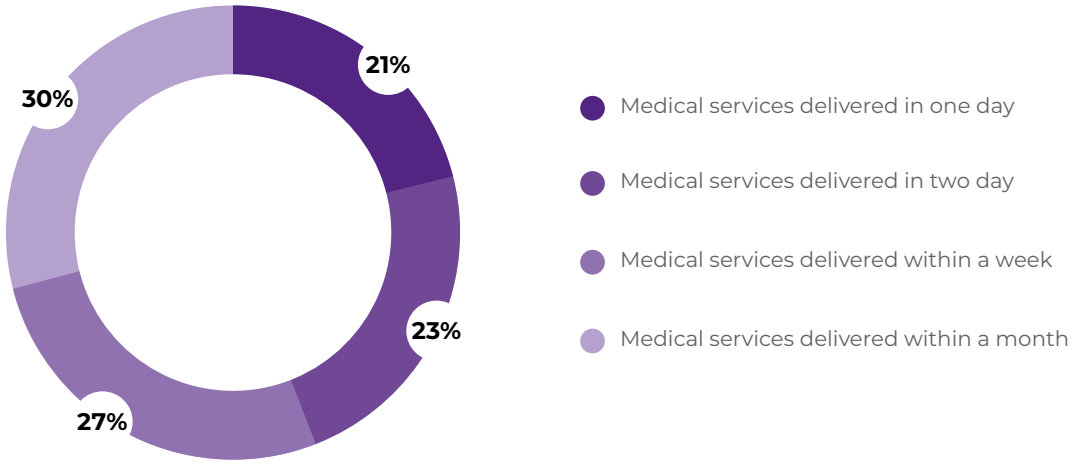
Figure 22
To what extent do you agree with the following statement: The Polish public healthcare system provides easy access to innovative medicines and therapies? Grouping based on respondents' education.



Despite layman opinion on the lengthy waiting time for medical services, respondents

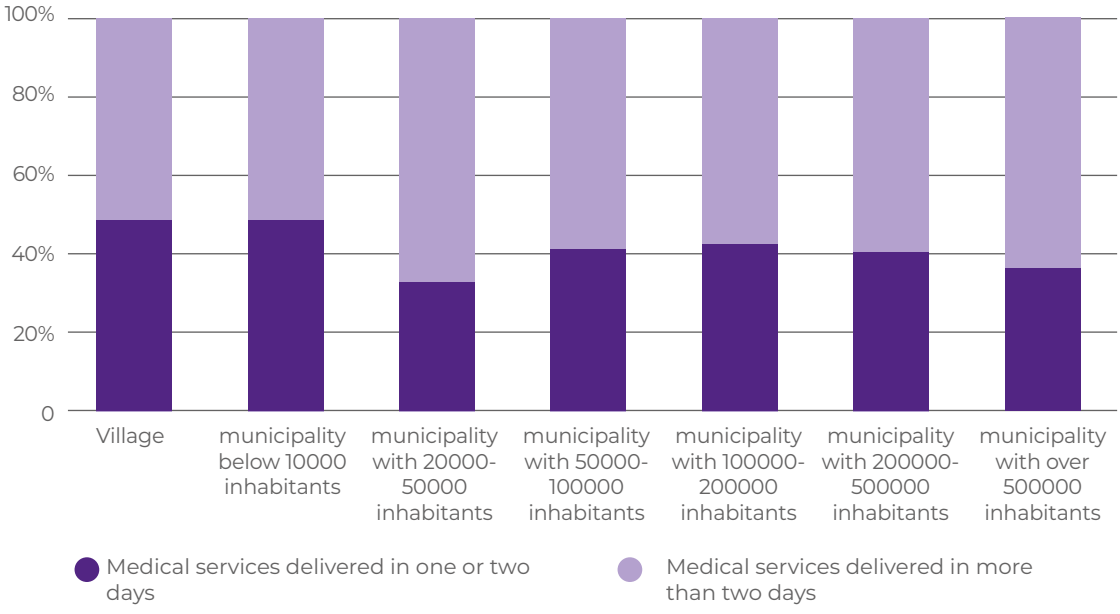
considered the problem to be less severe. 70% of all respondents received medical services within one week, while 44% within two days. This does not mean that there are no problems connected with timely provision of healthcare services in Poland. However they are less pronounced and pertinent to specific types of procedures.

Figure 23
How quickly have you recently received the necessary medical service in a public medical facility since such necessity occurred?



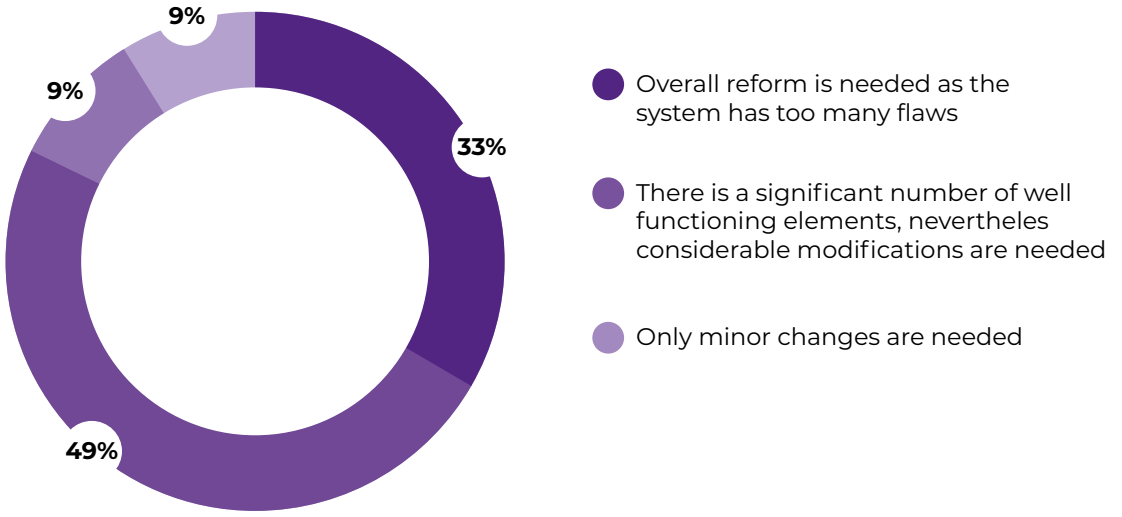
Analysing waiting times among different respondents' groups offers additional insight. The waiting time at public healthcare providers is dependant on the size of the municipality. It is the shortest in small towns and villages, and the longest in big cities, with cities with 20000-50000 inhabitants being an outlier, with the worst access.

Figure 24
How quickly have you recently received the necessary medical service in a public medical facility since such necessity occurred? Grouping based on respondents' residence



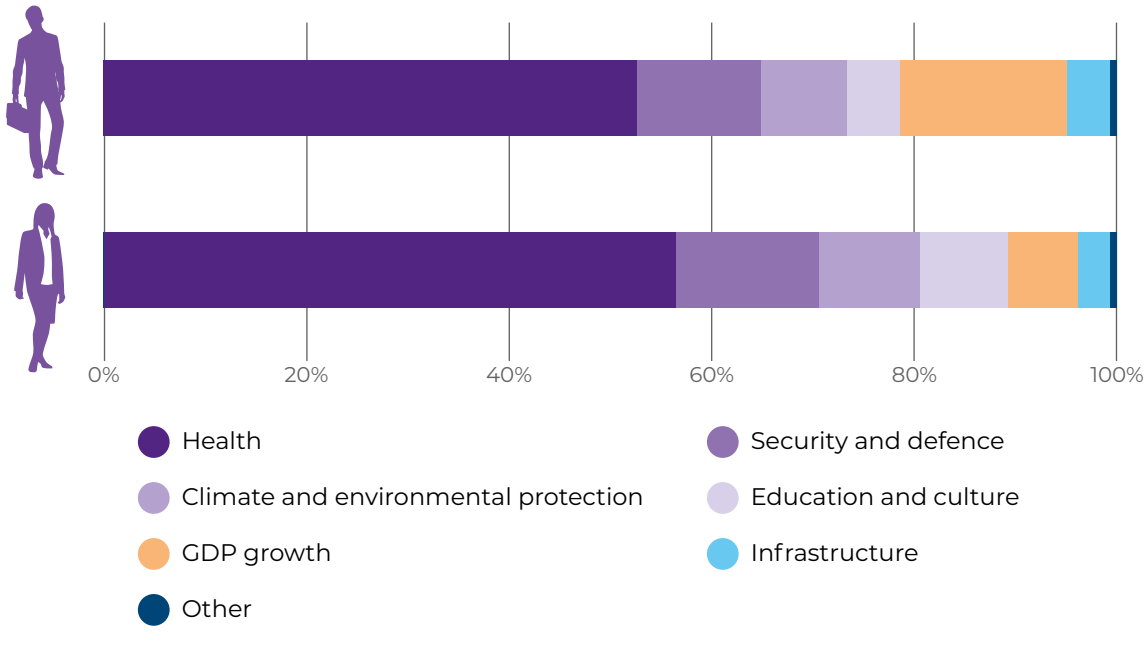
Being aware of these problems, a vast majority (82%) considers the Polish healthcare system in acute need of an overall reform or considerable modifications. The portion of respondents with such opinion is dependable on their age and level of education. 90% of those in the highest age brackets (45-65) consider that minor changes in the health-care system will not be enough to meet the demands of the society. The same ratio of those with the higher education confirms that this is indeed the case.

Figure 25
How do you perceive the Polish public healthcare system?



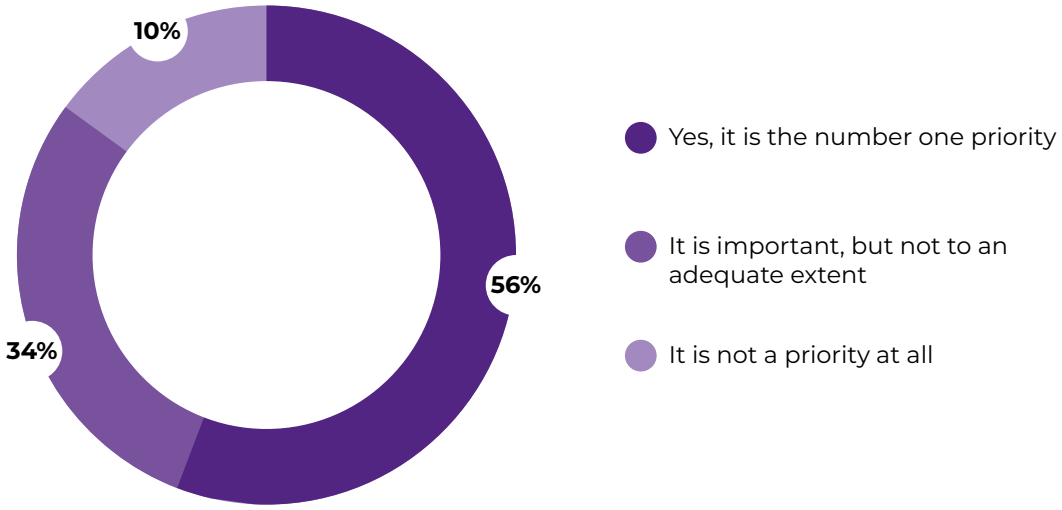
The need for reform is even more pronounced taking into consideration the fact that respondents reckon healthcare should be the top priority for the government, while its importance is recognized to a greater extent by women. 55% of respondents claim that health should be government's top priority during financial allocation process.

Figure 26
What should be the government's priority during public financing allocation?



It is thought-provoking that over half of respondents already consider healthcare on top of government's agenda. This is somewhat confounding taking into account the opinion on reform needs and problems encountered in the healthcare system. This opinion may be prove that the society is aware that the management of the public healthcare is extremely difficult and despite prioritization it is hard to amend the system. It may be also the case that respondents are not consistent in their answers or may be influenced by their political views.

Figure 27
In your opinion, does the government perceive healthcare as an important issue?



Summarizing the main findings of the poll, it is sure to say that COVID-19 pandemic has considerably improved the opinion on the importance of healthcare system in Poland. The government seems to already prioritize the system, which however is still in need of considerable reforms. The society supports this prioritization and is aware of the need to increase healthcare resources, though is reluctant to support the system directly. This might be an outcome of already visible financial barriers to healthcare services in particular.