

# INDICATORS OF FINANCIAL MANAGEMENT OF THE CROATIAN HEALTH INSURANCE FUND FROM 2000 TO 2014

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# INDICATORS OF FINANCIAL MANAGEMENT OF THE CROATIAN HEALTH INSURANCE FUND FROM 2000 TO 2014

## ABSTRACT

The goal of this research is to establish a connection and a mutual influence between the expenditure of funds of the Croatian Health Insurance Fund in Croatia from 2000 to 2014, expenditure per levels of healthcare, and the trend of services provided. This method uses the determination coefficient. Despite the increased spending of the CHIF in Croatia by as much as 80.6% (from 13.4 billion in 2001 to 24.2 billion in 2014), the primary healthcare shares, as well as hospital and polyclinic healthcare shares, have been reduced in the same time period. Contrary to that, expenses for medicaments are rising, as well as the expenses for the 'other expenses' group. Primary healthcare (PH, Croatian: Primarna zdravstvena zaštita) has significantly reduced price per service. Hospital healthcare (HH, Croatian: Bolnička zdravstvena zaštita) has the same number of hospitalizations, but their length has been significantly reduced. In processing the public publication data of the CHIF, the structure of data portrayed has been changing every few years so some data is impossible to track continuously. It is also impossible to understand the reason for such an attitude. PH, HH, and polyclinic advisory healthcare (PAH, Croatian: Poliklinička konzilijarna zdravstvena zaštita) are levels with the strongest and most decisive influence on the quality of the healthcare system on the one hand, and they are showing a strong negative trend in expenses with regard to medicaments and other expenses on the other hand.

**Keywords:** Financial indicators, Croatian Health Insurance Fund, population movement, healthcare services, prescriptions, price per service

## 1. Introduction

The healthcare system, as well as its quality and functioning, are of great interest in every country. The question that is becoming more and more important

in healthcare management is how to ensure sufficient funds for citizens' healthcare and how to redistribute said funds in order to use them in the best possible way. Healthcare services and intervention claims are ever growing and the funds and possibilities are lim-

ited. Financing healthcare is a great challenge and a very contemporary issue. No country is able to fully provide absolute availability of all the boons of modern medicine to citizens without rationing expenses and rationalizing medical procedures. Population aging, expensive medicinal technology and ever increasing patient expectations are only some of the reasons of the rise in healthcare expenditure. The development of the consumer society, changes in habits, as well as behavior patterns are very apparent in the healthcare sector today. The crucial factor in order for the healthcare system to function as a whole is the management of the financial system of healthcare. Because Croatia is a social state and because of the tradition of this region, the government and the CHIF have a key role. Taking funds into consideration, they must decide what is the optimal level (where is the bottom line) of healthcare (Kovačić, 2003; Ostojić et al., 2012).

The main role in organizing the healthcare system is played by the Healthcare Department, which plans healthcare, proposes laws, manages healthcare policies, and promotes health. The main role in financing healthcare is played by the CHIF which is responsible for the rational investment of funds for the purpose of enabling quality and efficient service to the insured as its mission<sup>1</sup> (Kovač, 2013).

The Croatian healthcare system is closest to the Bismarck model of financing healthcare, in which every person employed pays a current rate of 15% of their gross income to the CHIF, constituting 80% of its income<sup>2</sup> (Kovač, 2013). Aside from the mandatory insurance, CHIF also has supplementary, as well as additional, insurance on a voluntary basis<sup>3</sup>.

The largest portion of expenses for the CHIF (around 86%) is spent on paying for healthcare, which encompasses primary healthcare (PH), specialist-advisory and hospital healthcare (HH), medicaments determined by the basic and supplementary list of medicaments, dental tools, orthopedic tools, tertiary healthcare and foreign healthcare. Around 12% of expenses are spent on monetary reimbursements such as reimbursing for sick leave, reimbursing for temporary inability, maternity leave, specializations and trainees, reimbursing for injuries at work and professional ailments, as well as reimbursing for the transportation expenses for the purpose of realizing mandatory healthcare. Around 2% of expenses are made up of other expenses. The Healthcare Department supervises the legality of CHIF operations and the State Revision Office supervises the financial management of CHIF<sup>4</sup> (Kovač, 2013).

The way in which CHIF will finance healthcare primarily depends on the level of care and the kind of

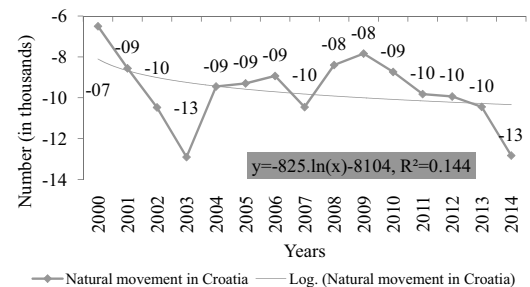
activity. PH is paid in a flat fee according to the number of the insured, by way of a standard team and a diagnostic-therapeutic procedure (DTP). Outpatient specialist-advisory healthcare is also paid by way of DTP and according to the price of one day of hospital treatment for stationary treatment, and by way of DTP for specialist-advisory healthcare<sup>5</sup>.

The goals of this paper were to study the structure and the means by which the CHIF funds were used from 2000 to 2014, to study the population movement trend and to compare it to the trends in financing healthcare; to determine the expenses and services trend per levels of healthcare. This study is a cross-sectional quantitative research using quantitative data. Considering the fact that CHIF is a public institution, the data on its operations are publicly available and CHIF publishes them in the form of annual reports. The material for this research is made up of data from annual reports ranging from 2000 to 2014. All annual reports are available on the CHIF website. The data on annual changes in absolute values for the number of residents in Croatia and expenses and services according to levels of healthcare were gathered and processed from those annual reports. The T-test, T-test trend analysis, and the determination coefficient methods were used (Bowers, 2014).

## 2. Results

The data which give insight into the demographic image of Croatia were processed in this study and a trend analysis was performed in order to show the movement of the population from 2000 to 2014. Considering that more residents of Croatia die each year than children are born (with a very clear continuation of the trend), negative natural movement is to be expected, as well as a negative resident movement ( $y = -825 \cdot \ln(x) - 8104$ ,  $R^2 = 0.144$ ) (Figure 1).

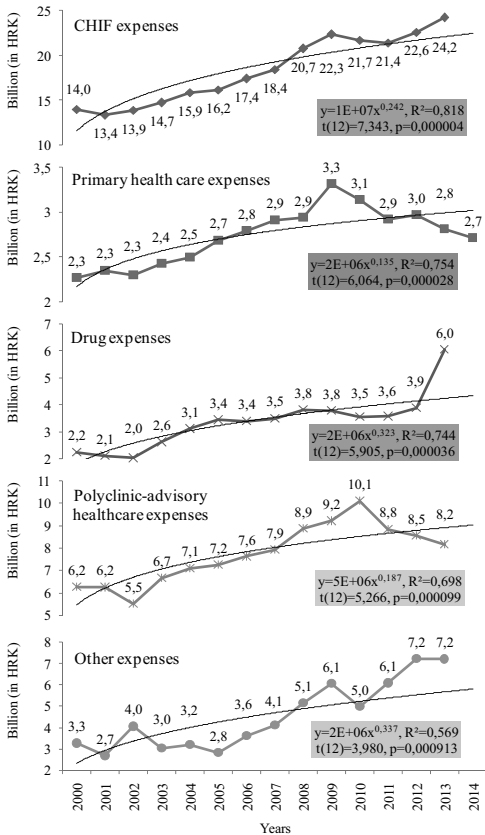
Figure 1 The natural movement of the population in Croatia from 2000 to 2014



Source: Authors' research

Expenses are one of the most frequent indicators of the management of healthcare components, ranging from CHIF as the largest and most important insurance agency in Croatia to health institutions on all levels, public or private. Expenses are divided into several groups, considering the possibility of accurately tracking them in a 15 year time period. The hospital (HH) and polyclinic-advisory healthcare (PAH) expenses are combined into one indicator because they had been observed separately up to 2006, and the tracking method has been changed afterwards, which made it impossible to separately track them in official CHIF publications (Figure 2).

**Figure 2 The expenses trend for CHIF and levels of healthcare (in HRK, Croatian national currency)**

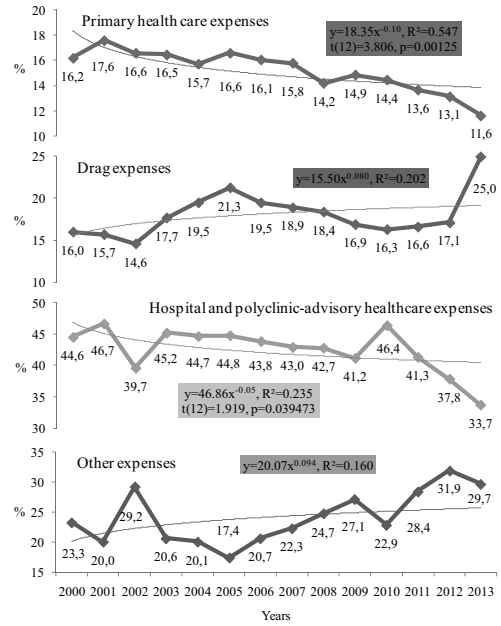


Source: Authors' research

The share in the total expenses for individual levels of healthcare, along with the absolute expenses trend, fills in the image of healthcare expenses (Figure 3). The HH and PAH expenses are also observed together in this analysis.

The PH share in expenses ( $y=18.35x^{-0.10}$ ,  $R^2=0.547$ ,  $t(12)=3.806$ ,  $p=0.00125$ ) and the PAH and HH share ( $y=46.86x^{-0.05}$ ,  $R^2=0.235$ ,  $t(12)=1.919$ ,  $p=0.039473$ ) have a significantly negative trend in relation to total expenses. On the other hand, medicament expenses ( $y=15.50x^{0.080}$ ,  $R^2=0.202$ ) and other expenses ( $y=20.07x^{0.094}$ ,  $R^2=0.160$ ) have a moderately rising trend.

**Figure 3 The financial share of selected levels of insurance trend from 2000 to 2013**



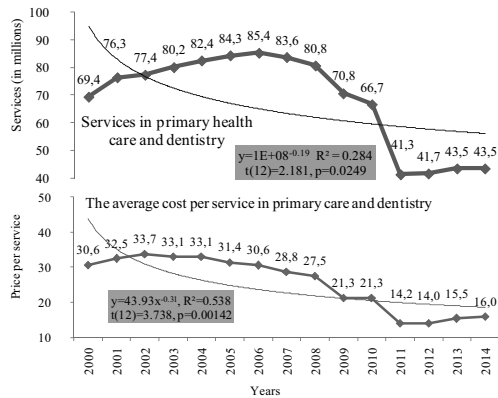
Source: Authors' research

The number of services is a very important indicator in healthcare (an even better one would be the quality of the individual service, which is impossible to estimate at this moment), especially when putting services on an individual level in relation to the financial indicators of that level.

The number of services in PH was rising up to 2006 and gradually falling afterwards, plunging in 2008 (Figure 4). Comparing absolute and relative expenses, two significantly opposing trends have been spotted in HH. Absolute expenses have an uprising trend (2.736 billion kuna on average,  $y=2E+06x^{0.135}$ ,  $R^2=0.754$ ,  $t(12)=6.064$ ,  $p<0.001$ ), while the relative expenses of HH are significantly decreasing in relation to the total expenses (25.6% on average,  $y=18.35x^{-0.10}$ ,  $R^2=0.547$ ,  $t(12)=3.806$ ,  $p=0.0013$ ). On the other hand, the number of services almost entirely follows the growth of expenses up to 2006

when it suddenly decreases, even though expenses still keep their uprising trend (68.5 million on average,  $y=1E+08x^{-0.19}$ ,  $R^2=0.284$ ,  $t(12)=2.181$ ,  $p=0.025$ ). The price per service in HH follows the rising expenses in HH only for the first three years, with a negative trend afterwards ( $y=43.93x^{-0.31}$ ,  $R^2=0.538$ ,  $t(12)=3.738$ ,  $p=0.0014$ ).

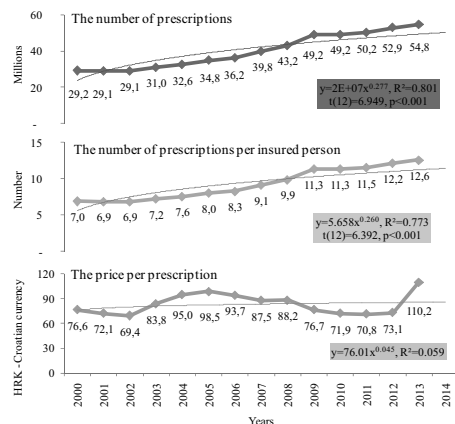
Figure 4 The number and value of HH services from 2000 to 2013



Source: Authors' research

The number of prescriptions issued in a year ( $y=2E+07x^{0.277}$ ,  $R^2=0.801$ ,  $t(12)=6.949$ ,  $p<0.001$ ) and the number of prescriptions per person insured in a year ( $y=5.658x^{0.260}$ ,  $R^2=0.773$ ,  $t(12)=6.392$ ,  $p<0.001$ ) show a significantly rising trend. A very weak rising trend is shown by average annual prices per prescription ( $y=76.01x^{0.045}$ ,  $R^2=0.059$ ) (Figure 5).

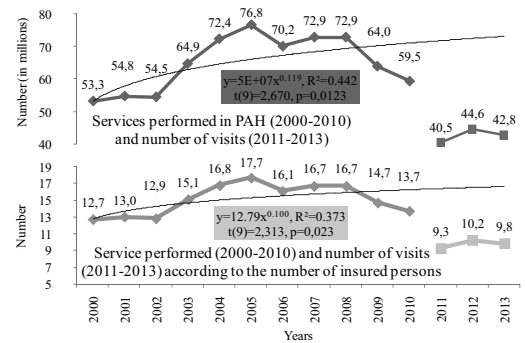
Figure 5 The indicator of the medicament expenses trend



Source: Authors' research

During the period under consideration, it is not possible to continually track the number of services given the fact that since 2011, services performed with PAH are no longer recorded, and have been replaced by the number of visits (Figure 6).

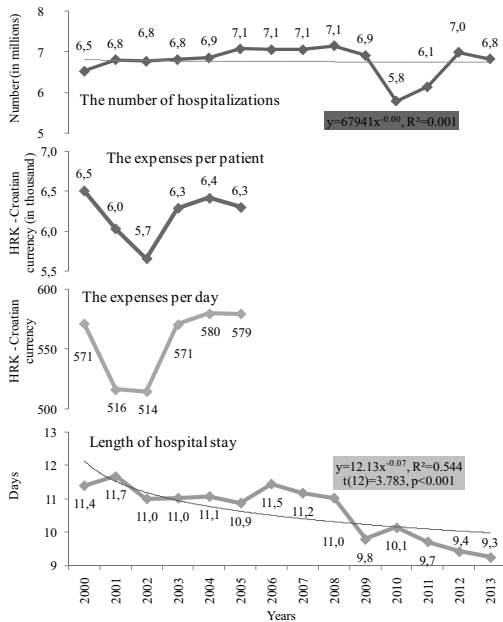
Figure 6 Services performed in PAH



Source: Authors' research

From the data which can be tracked during the entire period under consideration, data on the number of hospitalizations and the number of days per hospitalized patient is shown (Figure 7). 676,466 patients are hospitalized annually on average ( $SD=\pm 38201.9$ ) and annual oscillations are slight ( $y=67941x^{0.00}$ ,  $R^2=0.001$ ). It is not possible to determine with certainty why there was a large drop in the number of hospitalizations in 2010. In contrast, the length of hospitalization, lasting for 10.6 days on average during the period under consideration, has a significant negative trend ( $y=12.13x^{-0.07}$ ,  $R^2=0.544$ ,  $t(12)=3.783$ ,  $p<0.001$ ). Expenses per hospitalized patient, as well as the expenses per day of hospitalization, are impossible to track further than 2005.

**Figure 7** The number and length of hospitalization trend from 2000 to 2013

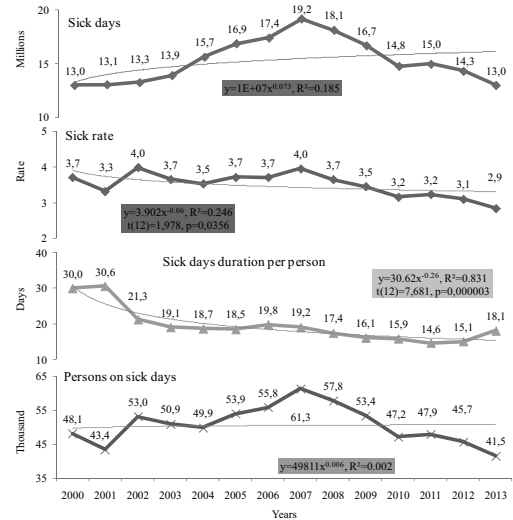


Source: Authors' research

Those insured by CHIF have the right to reimbursement for sick leave, with the expenses being covered within their basic health insurance. Therefore, the sick leave trend is also an important indicator of financial management (Figure 8). The total number of sick leave days on an annual level in the observed time period has a moderate rising trend ( $y=1E+07x^{0.073}$ ,  $R^2=0.185$ ). Nevertheless, the trend is showing a two-way course: the number of days increases up to 2008 in order to show the almost identical falling trend after that year. The number of sick leave days remains the same at the start and at the end of the observed time period (13.0 million days).

The rates of sick leave have a significant negative trend ( $y=3.902x^{-0.06}$ ,  $R^2=0.246$ ,  $t(12)=1.978$ ,  $p=0.0356$ ), as well as the duration of sick leave in days ( $y=30.62x^{-0.26}$ ,  $R^2=0.831$ ,  $t(12)=7.681$ ,  $p<0.001$ ). The trend of the number of people taking sick leave shows a negligible rising trend ( $y=49811x^{0.006}$ ,  $R^2=0.002$ ). This will probably change in the coming time period, most likely under the influence of the economic state and employment rates in Croatia.

**Figure 8** The sick leave trend in Croatia from 2000 to 2013



Source: Authors' research

### 3. Discussion

Population aging is becoming a factor in many developed countries of the world, as well as those in development. Within the 15-year time period from 2000 to 2014, the number of people deceased is several thousand more than the number of people born. Therefore, the population growth is negative (Figure 1). Even though it is undeniable that the extension of the life span is a great achievement in human history, it also represents a great challenge when taking into consideration the major economic, social, and political consequences (Song, Chen, 2015).

It is estimated that, by the year 2050, 21.1% of the world's population will be over 60 years old (Song, Chen, 2015). Croatia is no exception. According to data from 2007, the portion of people over 65 was 17%. The Croatian Bureau of Statistics predicts that the number of people over 65 years of age in Croatia will rise to 29.4% in 50 years (by the year 2061), which will significantly influence the healthcare system<sup>6</sup>. Financing healthcare for the elderly is a continuous challenge in healthcare institutions all over the world because they have a greater need for using healthcare services, which is primarily connected to chronic diseases. The increase in expenses rises due to the increase in using hospital services, but also because of the larger medicament expenditure

by the elderly (Obadić, Smolić, 2008). Therefore, a growth in the total expenses for healthcare, medications, and HH is expected.

Expenses, as an important indicator of CHIF operations, have a strong and very strong rising trend (Figure 2). In the 15-year time period, the average annual expenses amounted to 18.3 billion kuna. The lowest annual expenses were 13.4 billion kuna in 2001, and the highest were 24.2 billion kuna (almost double) in 2013. In 2013 80.6% more funds were spent than in 2001. The 15-year trend of expenses is very strong and significant, with the highest acceleration from 2007 to 2009 and from 2011 to 2013. Despite the reforms planned between 2006 and 2013, the primary goals of which were the financial stabilization and rationalization, the trend remained, which proves the inefficiency of the reforms and points to a need for better planning. Unfortunately, not enough data is available on the reforms carried out in Croatian healthcare and the estimates of their expenses are also unavailable. The European Commission points to the problem of strategic foundations of Croatian reforms (Džakula et al., 2014). Equally highlighted is the fact that not enough attention is being paid to the opinions of experts. Also, the reforms have been intertwined with controversies and scandals, which have increased the difficulty of their implementation (Džakula et al., 2014).

The growth in expenses in healthcare is concerning for the entire European Union. Expenses are growing and they are expected to continue growing. The mild growth of the total population, a rise in the percentage of the elderly within the population, and the development of medicinal science and technology which will continue to demand further investments are stated as the causes for this. It is questionable whether the profitability of these investments will ever show. Therefore, it will be extremely important to correctly estimate the expenses of healthcare in the coming decades so that the healthcare system can most adequately prepare for them with appropriate measures (Przywara, 2010).

Absolute expenses in PH show an index growth of 21.7%, but the correct indicator is the relative expense (share) with a significantly negative trend (Figure 3). In other words, PH has received less and less funds, which is not acceptable considering that PH is the filter of the healthcare system. Namely, research has shown beyond the shadow of a doubt the favorable effects of PH to health-

care indicators. Countries with a more developed and better PH show increasing patient satisfaction, fewer expenses per resident, fewer expenses for medicaments, as well as better results of healthcare indicators such as children's mortality, life expectancy, children with low birth weight percentage and others (Keglević Vrcić, 2014). These results suggest a greater need for investing into PH. In the recovery from debt in the healthcare system, hospitals always have the advantage. Every minister, unfortunately, spends money more readily on the hospital system than investing into an agreed minimum standard which must be met by every PH office. That way, patients would no longer unnecessarily have to go to polyclinics for tests and observations which could and should be done by PH physicians. The optimal ratio of doctors in PH with regard to clinical specialists would be above 50%. However, in Croatia, that ratio is only about 30:70% (Keglević Vrcić, 2014).

Expenses for HH and PAH show a strong rising trend with minimal expenses in 2010. This peak for expenses in 2010 is shown as a consequence of recovery from debt. The following reduction of debt occurred in 2014, but there is no credible data for that at the moment when this paper is being written. The increase in expenses between 2000 and 2013 was 32.3%. The increase of expenses for HH and PAH tells us that more and more healthcare problems are being dealt with on that level of health insurance, despite the notion that PH should deal with 70-80% of the problems. This also shows us an increasing number of referrals to PAH from PH (Zrinščak, 2007), and it is also important to notice that according to publicly accessible data of the CHIF from 2013, the number of referrals from PH to specialists was 6,354,624. There have been 9,132,084 specialist-advisory examinations noted during that same year<sup>7</sup>. A question of how there could be such a difference is raised and how patients are reaching specialists if the role of the general practitioner (also the primary physician within PH) is one of a "gatekeeper" for the health insurance system. All of this is increasing the difficulty of controlling the expenses of PAH and contributing to their increase. However, the share of HH and PAH expenses in the total expenses have a rising trend. Therefore, it is obvious that neither PH, HH nor PAH are the main, or the only, culprits for the increase of expenses over income. Considering their importance in the healthcare system, an expected growth of expenses

in those sections of healthcare is visible, but it alone cannot be the cause of the chronic crisis.

Expenses for medicaments, along with a strong and continuous growth, end with a prominent growth in 2013, an increase of 172.7% in relation to 2012. A continuous growth of expenses for medicaments is expected, considering the fact that the situation is similar all over Europe (Ess et al., 2003). However, it is important to notice a distinct jump in 2013. CHIF and hospitals had not paid for medicaments for over a year (some even more than two years), as it is shown by the available public data. A sudden and strong growth of total expenses for medicaments is a consequence of a budget intervention as an attempt to cover debt owed to drugstores. It is important that expenses for medicaments in relation to total expenses in healthcare show a rising trend and it is probably one of the causes of the financial crisis of the healthcare system.

Other expenses have the most irregular growth. They are made up of expenses for the employed, material expenses, financial expenses, expenses in acquisition of non-financial property and expenses for paying off loans, and costs of recovery. Due to annual variations, the trend strength is the least rising out of all the trends in other expenses groups. The growth of expenses at the end of the time period taken into consideration is 118.2% higher than in the year 2000. Therefore, the share of the other expenses group is larger, as well as that of medicaments in the total financial expenses during a 15-year period, to the detriment of PH, HH, and PAH.

Therefore, the expenses for medicaments and other expenses are the main causes of the financial crisis in healthcare and their appearance should be investigated, as well as the possibility of influencing them without disrupting the existing quality of healthcare.

The number of services in healthcare is largest for PH. From the start of the period taken into consideration, the number of services increased up to 2006, after which it began to fall. In 2011 it was half of what it was in 2006 (Figure 4). The fall in the number of services since 2011 is a probable consequence of computerization. Namely, the fall in the number of services in PH is evidence of the reducing quality of that section of healthcare that is being more and more overrun with administrative work, all to the detriment of the patients. The introduction of computerization has brought some bad con-

sequences, along with the good. Now patients can speak to their doctor on the phone and renew their prescriptions without a checkup, leading to a fall in the number of services once again.

The value (price) of service in PH also shows a significant negative trend (the fall in service value). The value of service in 2013 is half of what it was at the start of the time period taken into consideration. It is not possible to find a reason for this, nor is it possible to reach an explanation deduced from these indicators. It is highly probable that CHIF has negotiated lower prices with PH, but there is no public document or decision concerning that, and the contracts pertaining to it are confidential. The relative fall of the share of expenses in PH in relation to total expenses and the fall of the number and prices of services in PH point directly to the ever-decreasing effect of PH and the falling prices of services determined exclusively by CHIF. This conclusion is directly related to a decreasing relative share of PH expenses in the total expenses of healthcare.

Absolute expenses for medicaments have a strong and significant rising trend and relative expenses for medicaments have a moderately rising trend. The same strong rising trend follows the number of prescriptions issued which has doubled in the span of 15 years, as did the number of prescriptions per person insured (Figure 5). Despite a significant rise in the expenses for medicaments, the number of prescriptions issued, and the average number of prescriptions per person insured, the average price per prescription of 83.4 kuna shows a very weak rising trend. This means that the number of prescriptions issued has grown significantly faster than the expenses, which hasn't led to a rise in the price per prescription in the observed time period. Another explanation for the moderate rising trend of expenses for medicaments is artificially created because CHIF and healthcare institutions haven't paid their medicament bills or they have prolonged them throughout a large time period. That could have partially caused the creation of an almost set price per prescription. This got corrected in 2013 with the aforementioned recovery of debt when there was a sudden and strong growth of total expenses for medicaments, as well as the price per prescription in 2013, in relation to the entire trend and 2012 in particular. The absolute number of prescriptions in 2013 hasn't grown significantly, but almost double that money was spent that year so the price per one prescription has grown significantly.



It is not possible to track parameters in PH and during the issuing of prescriptions throughout PAH and HH because the CHIF usually changes reports and their structure after some time. Along those lines, the way of showing expenses for PAH and HH has changed since 2006. They were smaller several times in comparison to what they were for PAH and larger for HH. That is why they are shown on the same Figure (Figure 3). Besides, since 2011, PAH no longer shows the number of services but the number of visits, which is an important distinction, so the price of the individual service cannot be determined. CHIF reports do not explain the reason for such a changing way of portraying the same data so the question of intentional breaks in the continuous reporting of the public and peers is raised.

The number of services performed and the number of services performed per number of the insured in PAH have a significant moderate rising trend (Figure 6). The number of visits, as well as the number of visits in relation to the number of the insured, has been tracked for only three years so there is no point in interpreting it.

When processing HH, one must point out that since 2006, publicly available CHIF reports no longer allow the calculation of expenses for hospital treatment, expenses per patient and expenses per day, given the fact that the way of portraying hospital expenses changed that year. Since then, hospital expenses have been shown alongside PAH expenses or some of them are being portrayed differently so there is no definite possibility of establishing the continuity of expenses. Again, the question is raised as to whether there is an obvious intention by the CHIF in such a manner of reporting.

Among the data possible to track during the entire period are those of the number of hospitalizations and the number of days spent per patient hospitalized (Figure 7). The number of hospitalizations grew up to 2010 in order to insignificantly fall to 690 thousand hospitalizations in 2009 and then fall again by 10% in 2010, in relation to 2009. The number of hospitalizations returned to the expected value in 2011 and 2012. Based on this data alone, it is not possible to determine a reason for such an event. Other healthcare indicators should be taken into consideration as well. This drop in the number of hospitalizations cannot be linked to known strikes of healthcare personnel. For the whole 15-year period, the number of hospitalizations has a barely visible falling trend. Contrary to that, the duration of hospitalization has

had a very strong falling trend. The longest average hospitalization (11.7 days) occurred in 2001, and the shortest (9.3 days) in 2013, with the difference between them being 2.4 days. Considering the fact that there is no data on the quality of healthcare services in Croatia, nor are there standardized and regular healthcare indicators, one cannot say with certainty that longer hospitalization means higher quality i.e. greater success of hospital interventions. Therefore, it is not possible to conclude or assume that health is worse or better. Whatever the case may be, the parameters 1) number of hospitalizations per year (which doesn't change), 2) the duration of hospitalization and 3) the fall in the expenses share for PAH and HH obviously lead to a quicker patient release. It is also impossible to determine, given the data available, whether shorter hospitalization is a consequence of rationalization in healthcare institutions. If we would compare the duration of hospitalization with similar countries (Slovenia, Hungary), but also with other European countries, the data then shows that Croatia still has a significantly longer hospitalization period than those countries (Džakula et al., 2014).

Sick leave days are one of the indicators of the usage of healthcare, under the condition that this indicator is truly an indicator of using that right due to illness or invalidity (possible malpractice). Sick leave days in the 15-year period have a two-way trend. The rising trend peaks in 2008 at 19.2 million days, which is 47.7% more than in 2000. After that, it falls in 2013 to the same values of 2001 (Figure 8). However, through the entire period, the trend of sick leave days is moderately rising. A similar rising trend, only very weak, is shown in the number of people on sick leave as well. The rates of sick leave and their duration in days show a significant falling trend. That trend is moderate for sick leave rates and strongly falling for the trend of sick leave duration. This can hardly explain why sick leave days, as well as the number of people taking sick leave, reach their peak in 2007 and 2008 and then fall afterwards. It is highly likely that the cause is using the instrument of sick leave for other purposes. If it would be used for its intended purpose, the health of citizens would deteriorate for the aforementioned time period, and then suddenly improve. If that is the case, then the general practitioners have abused their authority. Similarly, the data showing that Croatia was ranked first out of 31 countries investigated in the 2005 research regarding the number of days spent on sick leave in

Europe is disastrous<sup>8</sup>. The reasons for the fall of the number of sick leaves after 2008 can somewhat be connected to the drop in the number of employees, as well as to the publicly announced and performed sick leave checks for CHIF employees.

The rates of sick leave and their duration in days have a contrary trend, which is opposed to the days of sick leave and the number of people taking it. This begs the question of the validity of such data, and the explanation of the calculation for the rates of sick leave and the duration of sick leave in days is not clearly written.

Considering the growth of healthcare needs and high expectations, as well as limited financial resources, the quality in the healthcare system is necessary for it to succeed. Croatia, sadly, does not have published data or indicators of healthcare quality (Lazibat et al., 2007). The Croatian healthcare system has a tendency of increasing the level of quality of healthcare services. The mandatory application of the healthcare system quality is being introduced, alongside certified systems for managing quality ISO 9001:2008 (Žabica et al., 2014). However, it is questionable to what extent they are applied in practice. Considering the fact that indicators of healthcare quality are still lacking at the moment when this paper is being written, it is hard to even connect the money spent and the quality of healthcare for the Croatian population.

#### 4. Conclusion

Expenses in the healthcare system are an inevitable topic for every country. During the 15-year time period ranging from 2000 to 2014, there have been expenditure trends in Croatia which state the need for the analysis and understanding of their causes. However, they also provide an insight into the healthcare system status in Croatia and offer us some instructions for the future. The financial expenditure in the healthcare system has almost doubled in the aforementioned time period. However, it is not possible to exactly determine whether the expenditure is followed by an increase in population health in Croatia, as it is possible in some other countries, because we only have health indicators for certain ailments and/or conditions. The fact that as much as 85% of CHIF income is made by income from gross paychecks demands attention. Namely, there is a very unfavorable ratio of residents paying fees and those using health insurance (1:3). Given the bad demographic picture, as well as the increasing emigration of young people from Croatia, there is a justified fear for that ratio to worsen. Measures of savings in healthcare are an extremely unpopular topic. At the same time, the economy is not advancing. The question is what the alternatives are and how we should keep the current standard of health insurance.

## REFERENCES

1. Bowers, D. (2014). *Medical Statistics from Scratch: An Introduction for Health Professionals*. 3rd edition. New Jersey: John Wiley & Sons Ltd.
2. Džakula, A., Sagan, A., Pavić, N., Lončarek, K., Sekelj-Kauzlarić, K. (2014), "Croatia: Health system review", *Health Systems in Transition*, Vol. 16, No. 3, pp. 1-162.
3. Ess, S. M., Schneeweiss, S., Szucs, T. D. (2003), "European healthcare policies for controlling drug expenditure", *Pharmacoeconomics*, Vol. 21, No. 2, pp. 89-103.
4. Keglević Vrcić, M. (2014), "Učinkovitost primarne zdravstvene zaštite: U spomen na Barbaru Starfield", *Medicina Familiaris Croatica*, Vol. 22, No. 2, pp. 5-16.
5. Kovač, N. (2013), "Financiranje zdravstva – situacija u Hrvatskoj", *Ekonomski vjesnik*, Vol. 26, No. 2, pp. 551-563.
6. Kovačić, L. (2003). *Organizacija i upravljanje u zdravstvenoj zaštiti*. Zagreb: Medicinska naklada.
7. Lazibat, T., Burčul, E., Baković, T. (2007), "Primjena sustava za upravljanje kvalitetom u hrvatskom zdravstvu", *Poslovna izvrsnost*, Vol. 1, No. 2, pp. 31-43.
8. Obadić, A., Smolić, Š. (2008), "Ekonomske i socijalne posljedice procesa starenja stanovništva", *Ekonomika istraživanja*, Vol. 21, No. 2, pp. 86-98.
9. Ostojić, R., Bilas, V., Franc, S. (2012), "Unapređenje kvalitete zdravstvenih sustava zemalja članica Europske unije i Republike Hrvatske", *Poslovna izvrsnost Zagreb*, Vol. 6, No. 2, pp. 109-126.
10. Przywara, B. (2010). *Projecting future health care expenditure at European level: drivers, methodology and main results*. Brussels: European Commission.
11. Song, P., Chen, Y. (2015), "Public policy response, aging in place, and big data platforms: Creating an effective collaborative system to cope with aging of the population", *BioScience Trends*, Vol. 9, No. 1, pp. 1-6.
12. Zrinščak, S. (2007), "Zdravstvena politika Hrvatske. U vrtlogu reformi i suvremenih društvenih izazova", *Revija za socijalnu politiku*, Vol. 14, No. 2, pp. 193-220.
13. Žabica, S., Lazibat, T., Dužević, I. (2014), "Implementacija sustava upravljanja kvalitetom na različitim razinama zdravstvene djelatnosti", *Poslovna izvrsnost Zagreb*, Vol. 8, No. 1, pp. 9-24.

## (ENDNOTES)

- 1 Croatian Health Insurance Fund, Available at: <http://www.hzzo.hr/> (Accessed on: January 01, 2016)
- 2 Croatian Health Insurance Fund, Available at: <http://www.hzzo.hr/> (Accessed on: January 01, 2016); Varga S, Pavić N, Matušin M, (2014). Godišnje izvješće za 2013. godinu. Zagreb: CHIF Directorate
- 3 Varga, S., Pavić, N., Matušin, M. (2014). Godišnje izvješće za 2013. godinu. Zagreb: CHIF Directorate
- 4 Varga, S., Pavić, N., Matušin, M. (2014). Godišnje izvješće za 2013. godinu. Zagreb: CHIF Directorate
- 5 Croatian Health Insurance Fund, Available at: <http://www.hzzo.hr/> (Accessed on: January 01, 2016)
- 6 Grizelj, M., Akrap, A. (2011). *Projekcije stanovništva Republike Hrvatske od 2010. do 2061. godine*. Zagreb: Croatian Bureau of Statistics.
- 7 Poljičanin, T., Benjak, T., (2014). *Hrvatski zdravstveno-statistički ljetopis za 2013. godinu*. Zagreb: Croatian Institute of Public Health.
- 8 Parent-Thirion, A., FernándezMacías, E., Hurley, J., Vermeylen, G. (2007). *Fourth European Working Conditions Survey*. Dublin: European Foundation for the Improvement of Living and Working Conditions.

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## **POKAZATELJI FINANCIJSKOGA POSLOVANJA HRVATSKOGA ZAVODA ZA ZDRAVSTVENO OSIGURANJE OD 2000. DO 2014. GODINE**

### **SAŽETAK**

Cilj je istraživanja utvrditi povezanost i međusobni utjecaj trendova potrošnje financijskih sredstava Hrvatskoga zavoda za zdravstveno osiguranje (HZZO) u Republici Hrvatskoj u razdoblju od 2000. do 2014. godine, potrošnju po razinama zdravstvene zaštite i trend pruženih usluga. U metodi je korišten koeficijent determinacije. Unatoč povećanim rashodima HZZO-a za pružanje zdravstvene zaštite u RH za 80,6% (od 13.4 milijarde u 2001. godini do 24.2 milijarde u 2014. godini), udjeli za primarnu zdravstvenu zaštitu, kao i za bolničku (BZZ) i polikliničku zdravstvenu zaštitu (PKZZ) se smanjuju u istom vremenskom razdoblju. Suprotno, rastu rashodi za lijekove i za grupu ostali rashodi. U PZZ-u snažno pojeftinjuje cijena po usluzi. U BZZ-u broj hospitalizacija se ne mijenja, ali dužina hospitalizacije se znatno skraćuje. U obradi podataka iz javnih publikacija HZZO-a svakih se nekoliko godina mijenja struktura prikazanih podataka pa je neke podatke nemoguće kontinuirano pratiti te shvatiti razlog takvom stavu. PZZ, BZZ i PKZZ su razine koje imaju najjači i presudni učinak na kvalitetu zdravstvenoga sustava s jedne strane, a s druge strane pokazuju snažni negativni trend u troškovima na račun rashoda za lijekove i ostale rashode u zdravstvu.

**Ključne riječi:** financijski pokazatelji, Hrvatski zavod za zdravstveno osiguranje, kretanje stanovništva, zdravstvene usluge, recepti, cijena po usluzi