

# INDIRECT COST OF RHEUMATOID ARTHRITIS IN POLAND HOW VALUABLE IS SOCIETAL PERSPECTIVE

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## Background

RA is a chronic disease, affecting over 200,000 people in Poland, 56% of whom are in productive age (30+), and unequivocally restricting their activities, leading to relatively rapid impairment or premature death. Over last 10 years several innovative health technologies were introduced for RA treatment. As the clinical data show, these new solutions alter the course of disease by delaying the decline in physical fitness of patients, therefore likely influencing the indirect cost.

### Objective

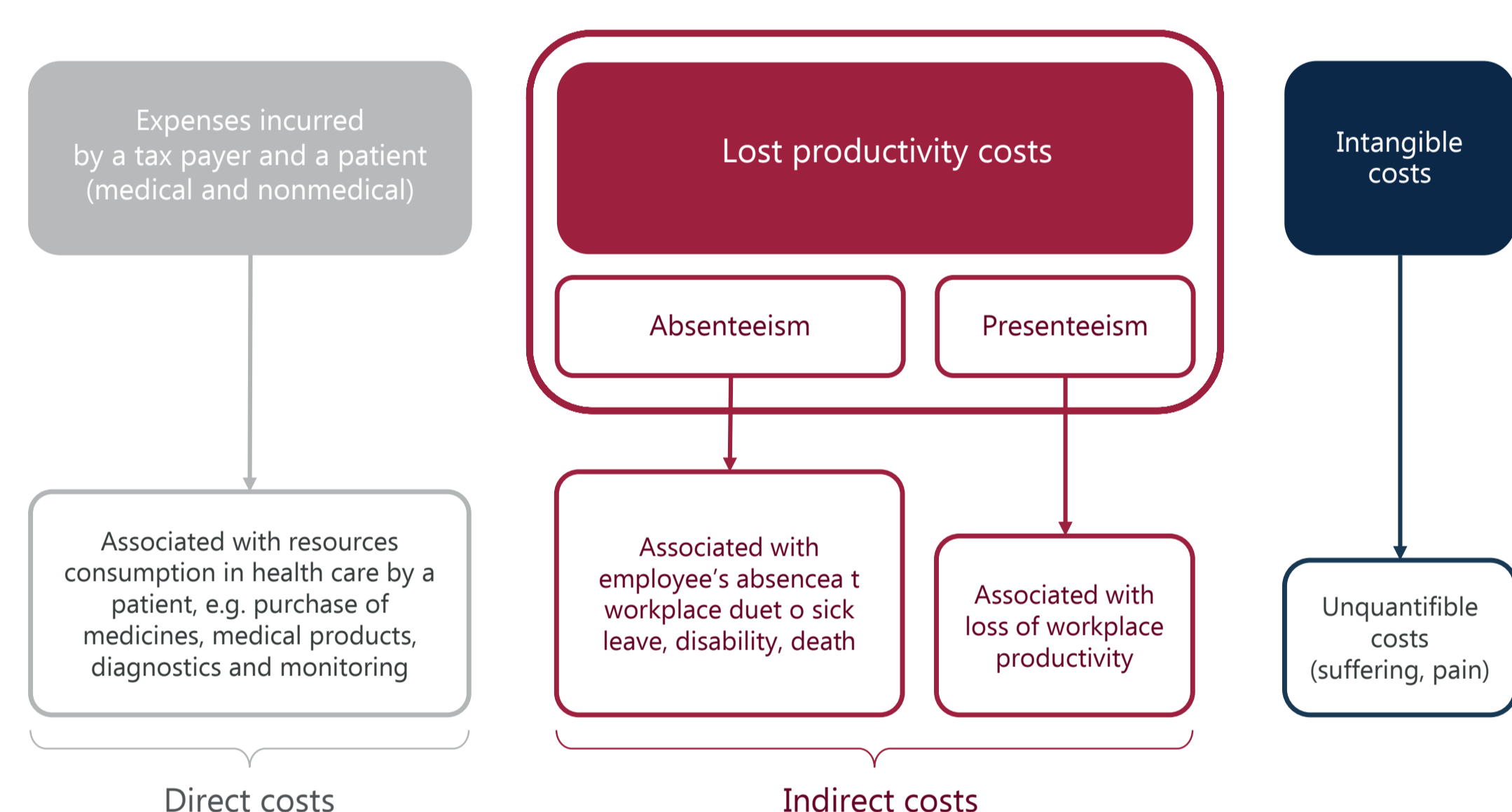
To estimate the annual direct and indirect costs of RA in Poland.

## Methods

### Costs categories, cost of illness analysis

Costs can be defined as the values of all charges (burden) related to the course of disease and its treatment. All costs eligible for monetary estimation can be classified as direct (expenditures directly related to a disease and applied therapy, such as medicines and medical services) and indirect (lost resources due to the disease and its implications). Moreover, the third category of unquantifiable nature is also distinguished and called intangible cost.

Figure 1. Definitions of direct, indirect and intangible costs



Legitimacy and possibilities of indirect cost assessment depend on the goal of particular analysis. Here we present results of cost-of-illness analysis. Cost-of-illness analysis is the type of analysis, which focuses on the assessment of complete economic burden generated by a disease in respect to various perspectives. The inclusion of indirect cost has a great informative value. Perspectives used in the analyses ought to be widest possible, and also describe the disease implications from standpoint of public payer, and when feasible - of public finances and society.

### Indirect cost assessment

In case of the indirect cost inclusion as the economic burden, two methods could be applied: human-capital or friction-cost. The entire potential societal loss due to restrains in utilization of human capital owing to the disease occurrence is evaluated with the human capital method. Fundamental limitation of this method in analysis taking the societal perspective lies in the built-in assumption of no institutional unemployment (involuntary). It means that the individual lost from labor market cannot be replaced by another individual in the burden-free (no loss) manner from the societal perspective. Under the human-capital method, it is assumed that indirect costs owing to lost productivity are generated constantly till the upper age limit of professional activity (or premature death).

In the friction-cost method prevails the assumption that lost productivity of worker imposes the burden on society to the extent of the appearing, unfilled gap. In particular in case of long term absence at work, the societal cost is generated till the moment of providing the substitute for a worker who left a position (e.g. due to retirement or death).

Criticism towards this method relies on arguments such as lack of satisfactory theoretical economic underpinnings as well as the relations constructed on its assumptions are not observable in practice (e.g. decrease in working time does not translate into the decline of unemployment).

Friction-cost method is presented as preliminary results of analysis from societal perspective. The use of human-capital method is regarded as acceptable only in case of supplementary application in societal perspective analysis. Results limited to a frictional period obtained with friction-cost method reflect much better real economy loss related to workers' sickness. Estimations acquired with the human-capital method demonstrate the hypothetical, maximal values related to lost productivity. It is advisable to set a frictional period at 3 months in performed analysis.

Independently on intensity measurement of lost productivity to be used in the indirect cost assessment, it is of significance to define economic valuation of this productivity. In the publication, several indices of economic valuation were analyzed (remuneration index, GDP and added value per capita or per worker).

It was assumed that GDP per worker constitutes the basis unit of productivity valuation in analysis performed from societal perspective. GDP is well-recognized index and proper information is reported regularly by GUS (Central Statistical Office in Poland). The real value of production and economic potential of a country are being included with the application of this parameter.

Moreover, the adjustment factor = 0.65 is applied (the factor in use in the analyses by governmental agencies e.g. Ministry of Economy) to this index to be corrected for marginal productivity.

Described above methodology and data collected from public sources, such as SII (The Social Insurance Institution) and NHF (The National Health Fund) and the available literature were used to estimate the cost from the public payer's and social perspective. The indirect costs were assessed using both the friction cost method (FC) and the human capital method (HC). All costs referred to 2012 and were presented in PLN. Number of RA patients in Poland was estimated to be 220 thousands of whom 120 thousands were at productive age and 50 thousands are employed.

Chart 1. Productivity measures – monthly values [PLN]

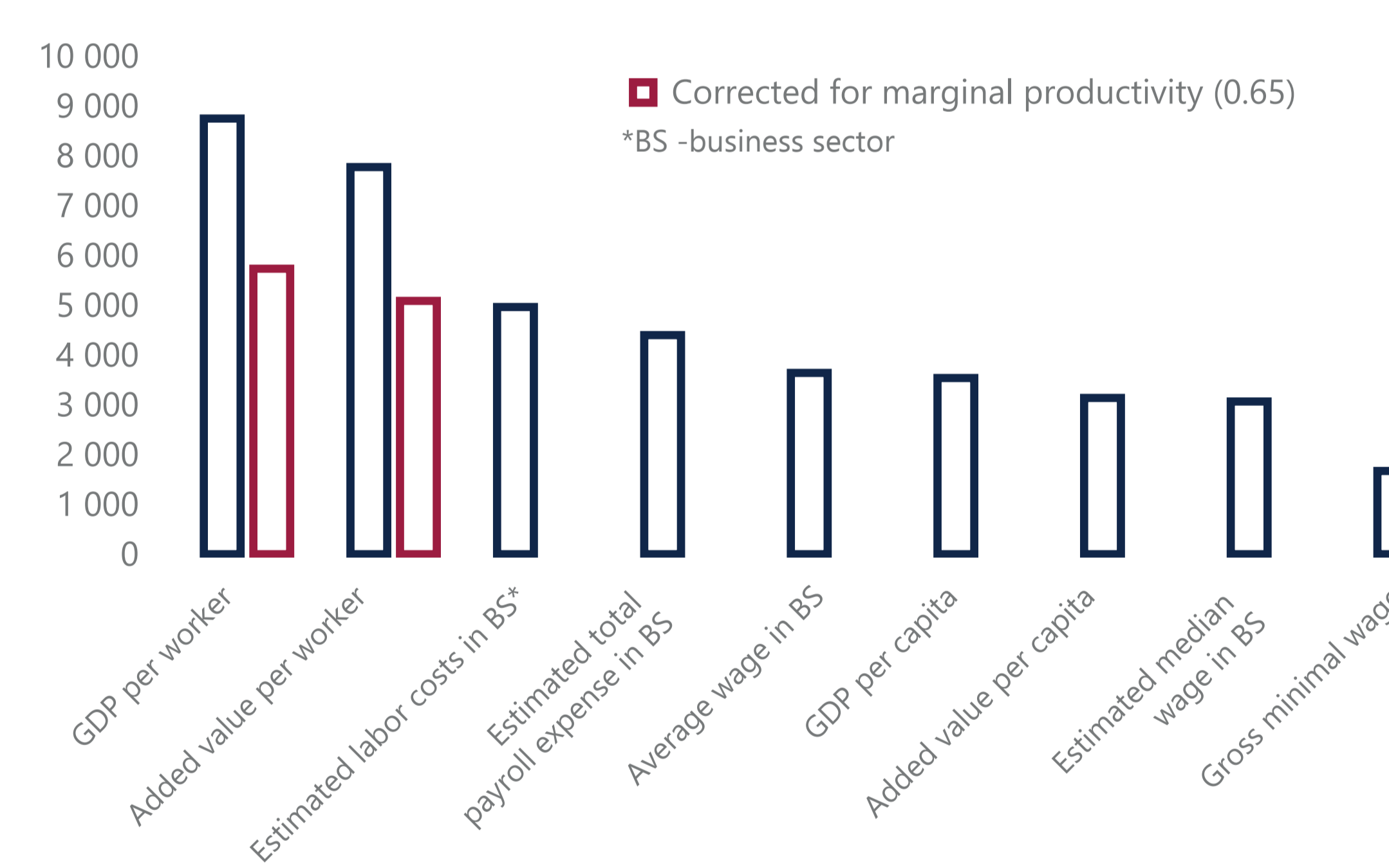


Table 1. Basic description of cost of illness analysis

Cost of illness analysis	
Goal	presenting total economic burden related to the presence of particular medical condition in a population
Application	<ul style="list-style-type: none"> <li>allows to assess economic impacts of a disease</li> <li>allows to compare the costs related to different diseases</li> <li>supports the determination of priority areas in the healthcare</li> <li>indicates the most costly areas associated with the disease</li> <li>shows trends associated with incurred costs</li> <li>permits to determine the maximal economic benefit in hypothetical situation of disease elimination</li> </ul>
Types	<ul style="list-style-type: none"> <li>based on morbidity</li> <li>based on incidence</li> </ul>
Perspective	most often broad: public payer, public finance, societal
Time horizon	most often 1 year, possible analyses with longer time horizon
Health outcomes evaluation	No
Results	<ul style="list-style-type: none"> <li>Total costs</li> <li>Costs divided into categories</li> </ul>
Discounting	<ul style="list-style-type: none"> <li>By estimation of financial flow – no;</li> <li>By estimation of present value of future costs - yes</li> </ul>
Data sources	epidemiological studies, registries, statistics on benefits, information on unit costs of benefits
Limitations	<ul style="list-style-type: none"> <li>accuracy of estimations depends on systemic solutions and quality of national databases</li> <li>probable overestimation of disease costs</li> <li>non-inclusion of comorbidities impacts</li> <li>quality and credibility proportional to availability of local data</li> </ul>

## Results

The direct cost related to RA from public payer's perspective amounted to 400 million PLN. The largest part in the direct cost had pharmaceutical treatment (mainly biologics) reaching almost 55%, while hospitalization nearly 22%. The remaining cost categories were: primary healthcare cost (7%), specialist outpatient cost, hospital procedures under medicines programs, spa treatments (4% each), rehabilitation (3%) and care and nursing benefits (1%). The social benefits, offered to RA patients by SII, not the public payer's budget, accounted for another 200 million PLN.

Chart 2. RA direct cost structure in 2012 – public payer's perspective

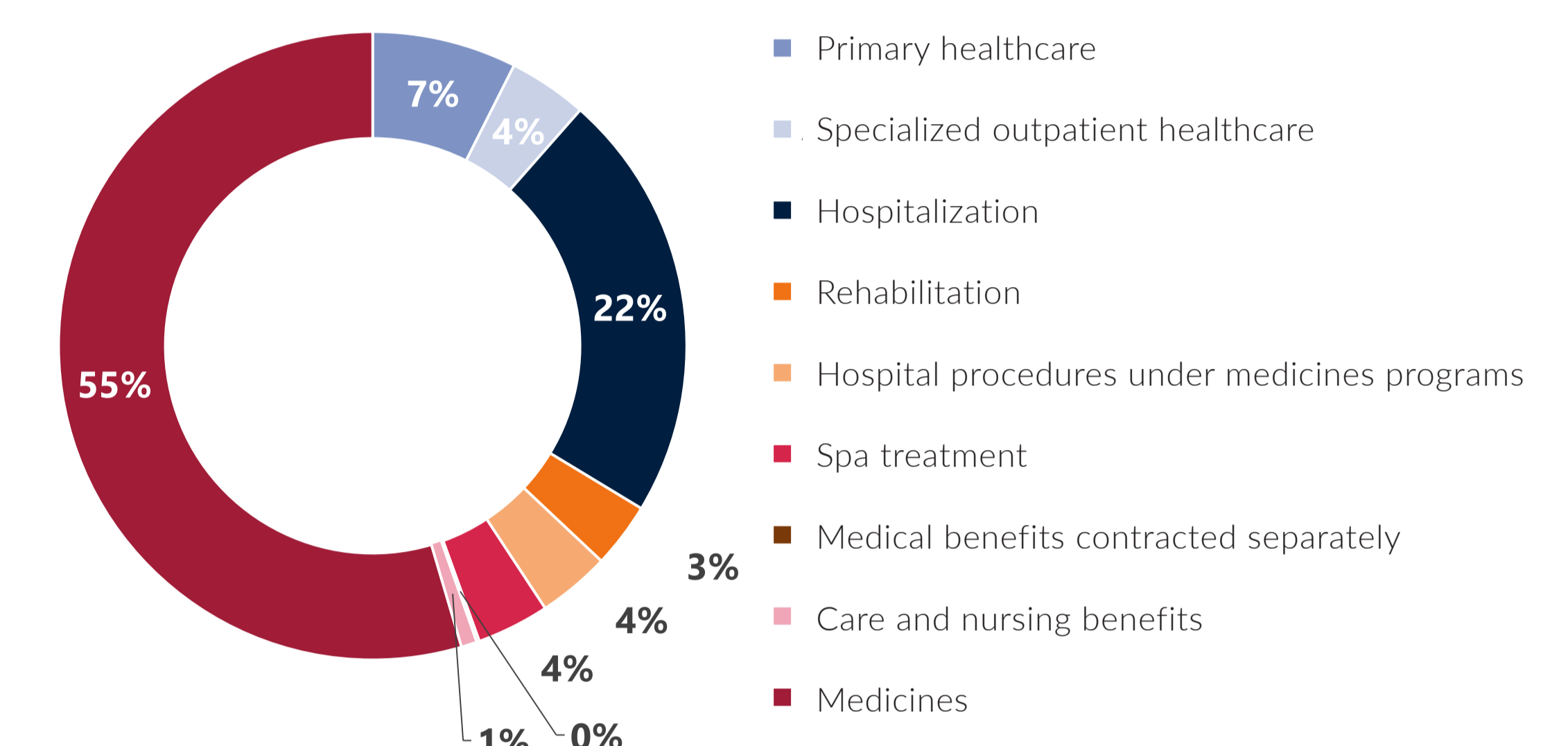
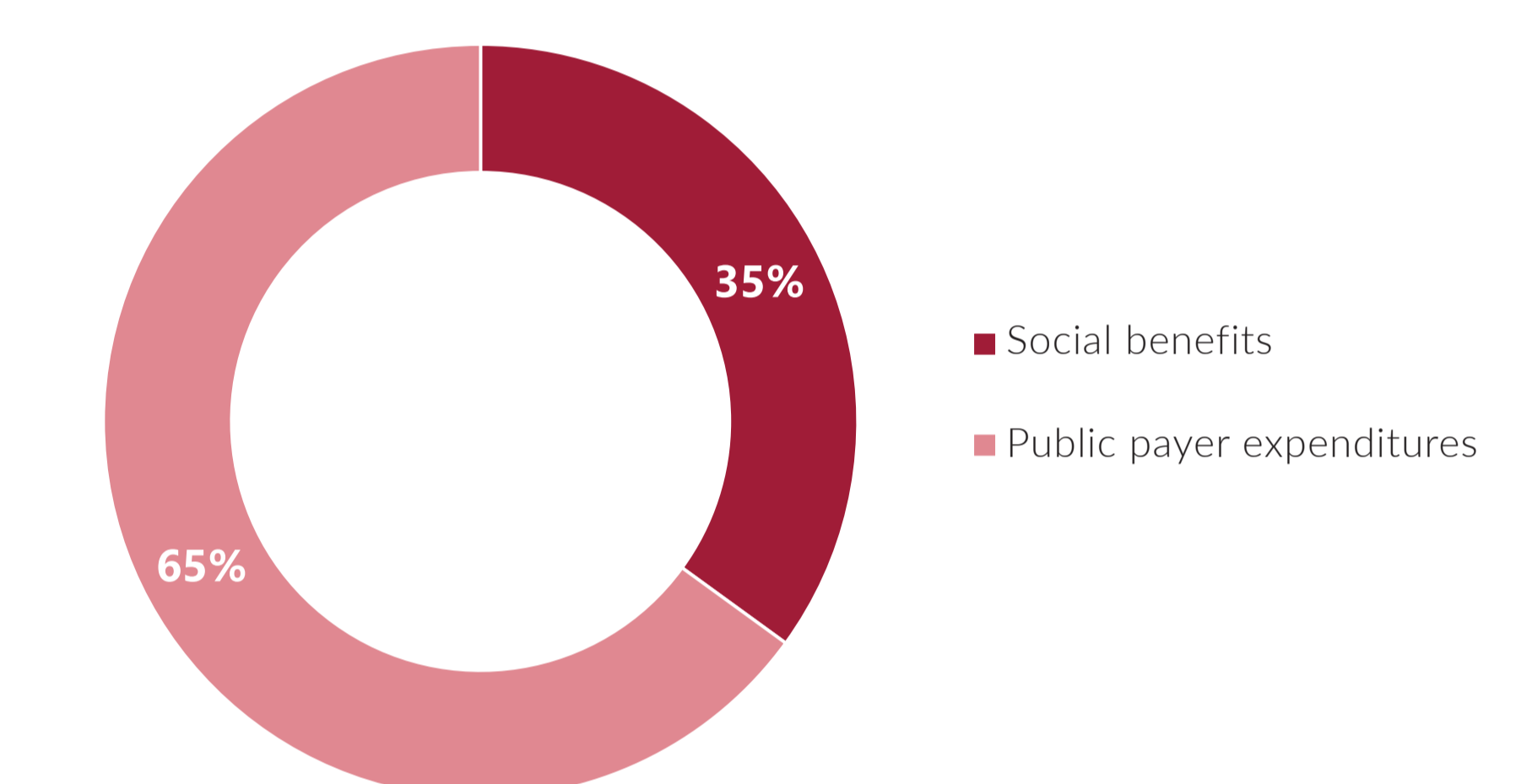
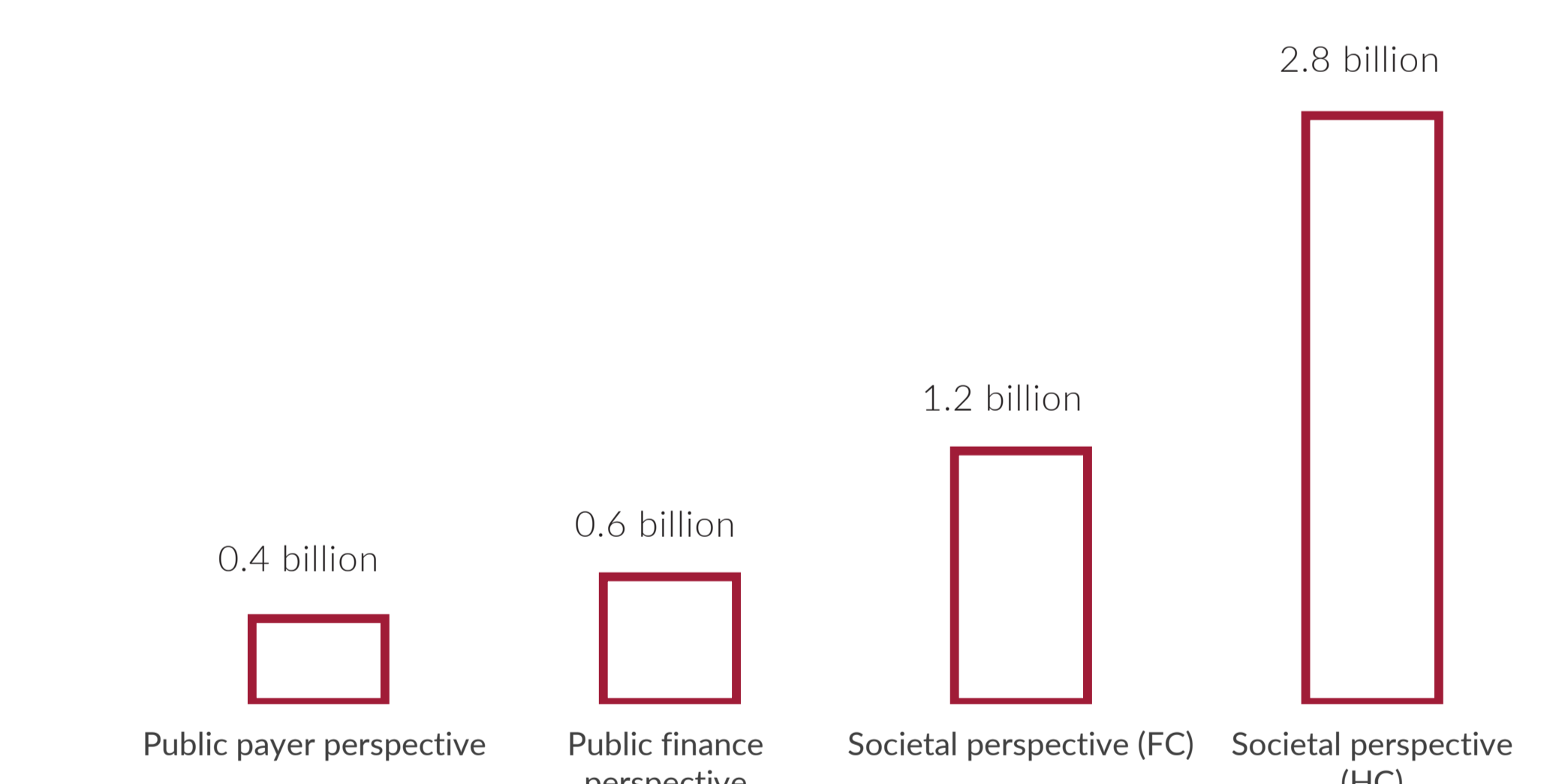


Chart 3. RA cost structure from public finance perspective



The burden of disease from the societal perspective was also high. The costs calculated with FC method amounted to 1.2 billion PLN and are twice as low as the costs calculated with the HC method (2.8 billion PLN). The cost of short term absenteeism (sick leaves) amounted to 577 million PLN, and the cost of informal care 251 million PLN. The long term absenteeism cost (work disability) varied from 9 million PLN (FC) to 1554 million PLN (HC).

Chart 4. RA costs from different perspectives and applied methods of indirect cost assessment [PLN]



## Conclusion

The burden of RA in Poland is high when considering the direct as well as the indirect costs. Our results show how valuable is societal perspective and that it has a significant role in healthcare analysis. However employment of such broad perspective requires the refinement of specific terms and the inclusion of clear and widely accepted methods.

## Abbreviations

FC	Rheumatoid Arthritis	HC	Friction Cost method
GDP	Gross Domestic Product	RA	Human Capital method

## References

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