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# Inequalities in health – the needs of the residents of Polish cities expressed in Participatory Budget projects

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**ABSTRACT**

**Introduction:** Health inequalities should be understood as differences in health between different groups in society. They are mainly due to the socioeconomic situation, which depends on the level of education, employment status, and the amount of earnings. In addition, access to goods and services as well as them are low funding, privatization and decentralization, are important. The aim of this study was to analyze the projects in the Participatory Budget (PB) of the main Polish cities in terms of the groups of health determinants they address.

**Material and methods:** The research material consisted of PB projects in provincial cities. The source of the information collected was data published by the cities on their websites. The analyses also used data on life expectancy at birth as a measure of health inequality in the urban populations studied. The amount of per capita funding for the projects studied was also examined. A document survey method was used. Projects were assigned categories of health determinant groups based on the rainbow model.

**Results:** The study analyzed a total of 1493 PB projects from 16 cities, of which 1028 were included for further analysis and assigned a group of health determinants. Among the cities, one can see a definite difference in the number of projects examined. The smallest number of projects was in Wrocław, but fewer projects related to health determinants were highlighted in Białystok (60%) and Opole (63%). The largest number of projects received funding in Warsaw (71%), and consequently they make up the largest group of surveyed projects.

**Conclusions:** Based on an analysis of PB projects in Polish provincial cities, it can be concluded that aspects related to health in the broadest sense are important to their residents. A high percentage of projects address areas that can affect the development and better functioning of residents. PB can be an enabling tool to reduce inequalities.

**KEY WORDS:** health inequalities, determinants of health, participatory budgeting, Poland.

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**INTRODUCTION**

Health inequalities have been observed for many years. They should be understood as differences in health between different groups in society. They are mainly due to the socioeconomic situation, which depends on the level of education, employment status, the amount of earnings, and access to goods and services. There are articles in the literature that talk about the causes of inequality. Prominent among them are low funding from the government, privatization, and decentraliza-

tion. Consequently, there are people who, for the reasons mentioned, have difficult access to health care facilities, live in unfavorable health conditions, or work in occupations with a higher risk of disease. Inequalities are unfair, but at the same time often avoidable [1].

The determinants of health were presented by Dahlgren and Whitehead in the “rainbow model”. It distinguishes between constitutive factors (age, gender, genes), individual lifestyle, social ties, living conditions, and general conditions (socioeconomic, cultural, environ-

mental). The constitutive factors at the lowest level are the only ones in the model that are not modifiable. However, it is possible to respond to gender- or age-specific health needs. The second level is concerned with leading a healthy and active lifestyle. The next layer of the model consists of relationships and social ties. It is important for society members to support each other, to integrate, and for individuals not to be lonely. The fourth level is living conditions. These consist of areas such as working conditions, housing, facilities for the disabled, opportunities for development, and access to recreational facilities. The last layer includes general conditions, because especially these days it is important for citizens to take care of the environment [2]. This involves educating the public in environmental policy [3].

One of the main goals of the National Health Program (NHP) for 2016-2020 and 2021-2025 is to reduce social inequalities in health. In the NHP, operational goals have been developed with an indication of the entities that are responsible for their implementation and sources of funding [4, 5].

On the other hand, a map of health needs can be a useful predictive instrument. These are used in many countries around the world. In Poland, the first maps were published in 2016. Their main task is to help manage health care by, among other things, diagnosing and forecasting the health needs of the population to make the best use of funds allocated for health care [4].

Therefore, it can be considered that both of these documents are crucial in bridging social inequalities in health. The NPZ is a strategic document, while the health needs maps provide information about inequalities in access to health care [6]. As the data presented by the National Institute of Public Health PZH – National Research Institute shows, the NPZ is not fulfilling its purpose, and health inequalities are increasing. The gap in male life expectancy by education has widened, and the same is true when comparing male and female data [7].

In order to reduce social inequalities in health, the available tools should be used. The Citizens' Budget (PB), also known as Participatory Budgeting, can be such a tool. It is an annual democratic process in which residents participate in deciding how to spend a certain portion of a local government's budget. The idea of PB is based on activating residents, involving them in public life and increasing public interest in the functioning of local government. It also promotes greater openness of local government bodies to the needs of the community and greater accuracy of investment decisions. Ideas are submitted by the community in the form of projects. To some extent, they reflect their potential needs, which may arise from existing health inequalities in local populations. Thus, PBs can provide potential support in leveling the most common problems [8].

The aim of this study was to analyze the projects in the PB of Polish main cities in terms of the groups of health determinants they address.

## MATERIAL AND METHODS

The research material consisted of PB projects of provincial cities in which voting took place in 2022, with the implementation of tasks in 2023. The source of the collected information was the data published by the cities on their websites [9-24]. In provinces with 2 capitals, the city in which the seat of the provincial assembly is located was selected. Due to the fact that the continuation of the PB in Zielona Gora was abandoned, the PB of Gorzow Wielkopolski was adopted for the analysis. The following elements were taken into account in the analyses: the name of the task, the nature of the task (all-city/district), the description of the task, the amount of funds allocated, and the number of residents of the analyzed cities [25]. The analyses also used data on life expectancy at birth as a measure of health inequality in the urban populations studied [26, 27].

The document survey method was used. All projects that, by the decision of residents, received funding for implementation in 2023 were analyzed. Projects relating to the broad health of individuals and populations were singled out. The exact inclusion and exclusion criteria can be found in Supplementary Table 1.

They were then assigned categories of health determinant groups based on the "rainbow model". The assignment was verified by 2 researchers. Any doubts were resolved through consultation. The structure of projects by each determinant group was analyzed. The amount of funds allocated to the studied projects per capita was also examined. The data obtained were related to data on life expectancy at birth in each city.

## RESULTS

The study analyzed a total of 1493 PB projects from 16 cities, of which 1028 were included for further analysis and assigned a group of health determinants.

They account for 68.85% of all projects. Among the cities, one can see a definite difference in the number of projects examined. The smallest number of projects was in Wroclaw, but fewer projects related to health determinants were highlighted in Bialystok and Opole. The largest number of projects received funding in Warsaw, and consequently they make up the largest group of surveyed projects. The cities also differ significantly in the percentage of occurrence of projects classified into health determinant groups. The lowest was in Lublin, with 46.34%, and the highest in Wroclaw, with 88.24%. All cities, with the exception of Kielce, introduced a division of projects into city-wide and neighborhood projects. A much higher percentage comprised neighborhood tasks. Detailed data are presented in Table 1.

**TABLE 1.** Characteristics of the analysed civic projects in provincial cities

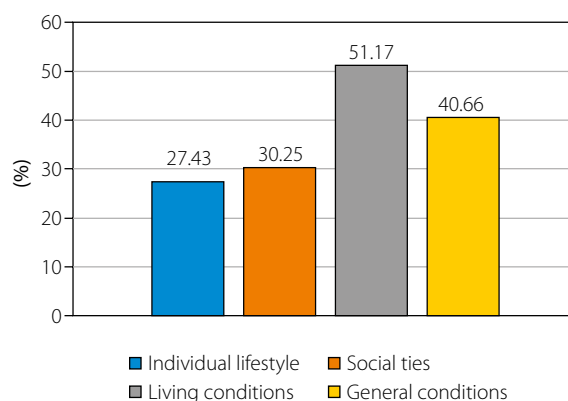
City	Total number of projects	Number of projects surveyed	Percentage of projects surveyed	Number of city-wide projects surveyed	Number of district projects surveyed
Białystok	20	12	60.00	6	6
Gdańsk	118	89	75.42	6	83
Gorzów Wlkp.	51	36	70.59	3	33
Katowice	243	171	70.37	13	158
Kielce	37	28	75.68	Not applicable	Not applicable
Kraków	184	134	72.83	6	128
Lublin	41	19	46.34	6	13
Łódź	247	160	64.78	8	152
Olsztyn	36	20	55.56	3	17
Opole	19	12	63.16	3	9
Poznań	31	25	80.65	3	22
Rzeszów	36	19	52.78	0	19
Szczecin	26	16	61.54	1	15
Toruń	61	39	63.93	2	37
Warszawa	326	233	71.47	17	216
Wrocław	17	15	88.24	6	9
Total	1493	1028	68.85	83	917

Each project could have been assigned to more than one group of determinants due to its complexity. The largest number of projects, 51.17%, were related to living conditions. In 40.66% of the projects there were elements to improve general conditions. 30.16% of projects were aimed at strengthening social ties, and 27.43% were aimed at changing individual lifestyles. The overall percentage distribution of results is shown in Figure 1.

In many cities, living conditions appear in the 53-79% range. This is above average. For 4 cities, general conditions turn out to be the most important, especially in Wrocław, where they appear in almost every project (93%). Residents of Lublin and Opole mostly voted for projects that can affect individual lifestyles, at 89% and 58%, respectively. The only residents for whom social ties are most important are Poznań residents. Projects in this group of determinants comprise as much as 84%. For this, the least are tasks relating to general conditions, at only 12%. Detailed data are presented in Figure 2.

Table 2 shows the budget that was allocated to projects in each category. Because there were projects with more than one group of health determinants assigned, the costs do not add up in the cities. Overall, in all localities, the largest portion of the budget is accounted for by individual lifestyle projects (PLN 113,920,543.00), while much less was allocated to tasks that build social ties (PLN 65,965,614.50).

The study counted the per capita cost of the projects studied. On average, the cities allocated PLN 31.97 per capita. The smallest expenditures were incurred by Rzeszów

**FIGURE 1.** Percentage of projects with each group of health determinants assigned

and Białystok, at PLN 15.38 and PLN 17.04, respectively. More than twice as much was spent by Warsaw and Wrocław (PLN 42.72 and PLN 40.04, respectively).

The average life expectancy for men in Poland is 72.42 years. This is almost 8 years less than for women (80.17 years). The lowest values for life expectancy for both sexes were recorded in Gorzów Wielkopolski, Łódź, and Katowice. Men, on the other hand, live the longest in Gdańsk and Kraków. Women also die the latest in the aforementioned cities and in Poznań. Detailed data comparing the percentage of projects in each group of determinants, life expectancy for men and women, and per capita costs among the projects studied are presented in Table 3.

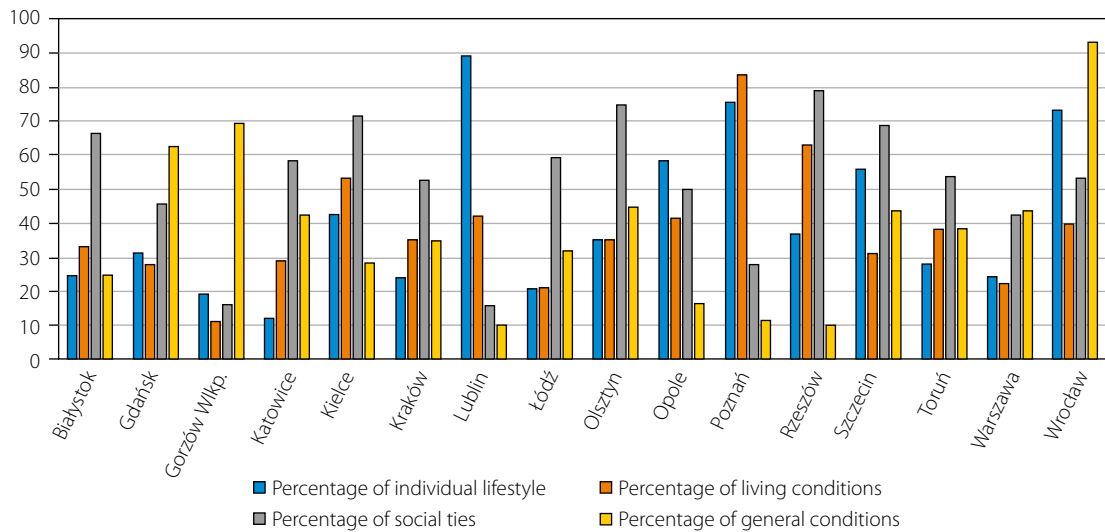


FIGURE 2. Percentage of projects in each group of determinants in the surveyed cities

TABLE 2. Project costs in each group of determinants

City	Cost of projects individual lifestyle (PLN)	Cost of projects social ties (PLN)	Cost of projects living conditions (PLN)	Cost of projects general conditions (PLN)
Białystok	2 049 400.00	2 099 400.00	2 907 200.00	484 000.00
Gdańsk	7 425 022.00	4 467 815.00	6 754 389.00	7 116 797.00
Gorzów Wlkp.	1 224 999.00	524 444.00	690 520.00	1 356 169.85
Katowice	2 433 490.00	2 090 640.00	4 112 763.00	3 266 547.00
Kielce	5 069 900.00	4 989 900.00	3 488 000.00	5 795 200.00
Kraków	7 604 863.00	5 892 933.00	9 080 021.00	11 908 286.00
Lublin	6 262 426.00	2 794 226.00	544 400.00	665 000.00
Łódź	4 508 650.00	2 787 750.00	8 158 770.00	6 098 710.00
Olsztyn	1 560 661.00	667 000.00	2 643 118.00	2 036 118.00
Opole	3 299 900.00	1 079 900.00	1 554 200.00	214 200.00
Poznań	13 859 000.00	14 859 000.00	5 378 000.00	4 778 000.00
Rzeszów	1 397 000.00	1 647 000.00	2 123 920.00	800 000.00
Szczecin	4 649 199.00	1 739 417.00	10 008 091.00	4 245 199.00
Toruń	1 092 193.00	938 193.00	1 680 721.00	1 929 309.00
Warszawa	30 483 840.00	7 387 996.50	25 253 953.36	34 924 560.50
Wrocław	21 000 000.00	12 000 000.00	16 000 000.00	24 000 000.00
Total	113 920 543.00	65 965 614.50	100 378 066.36	109 618 096.35

**DISCUSSION**

The results of the survey clearly indicate that projects relating to living conditions are a popular theme in the PB. According to the adopted criteria for inclusion in this group, tasks were included, including the creation of recreational places, adaptation of passageways to the needs of the disabled, organization of free workshops on various topics for all ages, or the purchase of ambulances, defibrillators, and subsidizing *in vitro* procedures. The range of tasks in this group is very wide, which at the same time means that residents perceive deficiencies in this group of health determinants. This may be related

to physiological needs and the need for safety, which form the basis in Maslow’s hierarchy of needs [28].

Comparing Lodz and Katowice, 2 similarities can be noted. Residents of these cities live the shortest lives and report similar needs through PB. The dominant layer in the projects from the rainbow model is that of living conditions (just under 60%), while the smallest number of projects are those related to individual lifestyles. The only difference in these cities is per capita spending. In Lodz, this is among the lowest in the country. Katowice, on the other hand, allocates about PLN 9 more per capita.

**TABLE 3.** Percentage of projects in each determinant group, life expectancy for men and women, and per capita costs among the projects studied

City	Percentage of projects individual lifestyle	Percentage of projects social ties	Percentage of projects living conditions	Percentage of projects general conditions	Life expectancy for men	Life expectancy for women	Per capita costs (surveyed projects) (PLN)
Białystok	25.00	33.33	66.67	25.00	72.0	80.7	17.04
Gdańsk	31.46	28.09	46.07	62.92	74.1	81.3	29.03
Gorzów Wlkp.	19.44	11.11	16.67	69.44	70.3	78.7	26.85
Katowice	12.28	29.24	58.48	42.69	70.7	78.3	27.80
Kielce	42.86	53.57	71.43	28.57	71.7	79.8	38.05
Kraków	24.63	35.07	52.99	35.07	74.8	81.8	29.90
Lublin	89.47	42.11	15.79	10.53	72.2	79.6	20.36
Łódź	20.63	21.25	59.38	31.88	70.5	78.4	18.67
Olsztyn	35.00	35.00	75.00	45.00	70.9	79.6	21.37
Opole	58.33	41.67	50.00	16.67	73.3	81.1	35.97
Poznań	76.00	84.00	28.00	12.00	73.6	81.2	36.46
Rzeszów	36.84	63.16	78.95	10.53	73.4	80.7	15.38
Szczecin	56.25	31.25	68.75	43.75	71.7	79.8	31.81
Toruń	28.21	38.46	53.85	38.46	72.6	79.5	19.41
Warszawa	24.46	22.75	42.49	43.35	73.6	81.1	42.72
Wrocław	73.33	40.00	53.33	93.33	73.3	81.1	40.04
Average	27.43	30.25	51.17	40.66	72.42	80.17	31.97

Nearly 90% of projects in Lublin have tasks from the individual lifestyle group. This is the highest value in the surveyed cities. According to Lalond's fields, it is lifestyle that is most important for health [29]. Through PB, individuals can be facilitated to make good choices that have a positive impact on health. Among the projects were the creation of walking alleys, bicycle paths, gyms, and other places for physical activity. In addition, the organization of all sports activities is noteworthy, which, in addition to introducing proper habits, can build social ties among people with similar interests. The city has allocated PLN 6 million for projects in this group of determinants. Per capita costs are among the lowest among the surveyed localities.

The standout city is Poznan, which puts a premium on social ties (84%). This result is much higher than the average for all 16 cities (30.25%). Social capital in the form of support, integration, or spending leisure time with people with similar interests can have a positive impact on health. A lack of social ties can negatively impact mental health and lead to depression [30]. Belongingness is one of the needs in Maslow's pyramid [28]. The second most frequently reported projects are those related to individual lifestyles. Interestingly, this community's life expectancy is 73.6 years for men and 81.2 years for women. The city spent PLN 36.46 per capita.

A common feature for Białystok and Rzeszow is the life expectancy of women, which is 80.7. Local government spending is also at a similar level; for Rzeszow it

is PLN 15.38 per capita and for Białystok – PLN 17.04 per capita. Both cities showed the highest demand in terms of living conditions. In second place, residents from Rzeszow prioritized projects that take into account social ties. The same is true for residents from Białystok.

Residents of the Southeast do not see the need to invest local funds in general conditions projects. The reason is the belief that there is enough green space in their city [31]. This survey also confirms our results in the context of individual lifestyles. The level of demand in this category was less than 40%. In the aforementioned study, respondents indicated that their city provided them with convenient conditions for physical activity and recreation. Also, it was shown that women rated the indicated conditions better than men [31]. In the case of Białystok, individual lifestyle and general conditions were not important areas in the PB. The survey showed that the preferred forms of physical activity for this community were gardening (42%), cycling (39%), and swimming (20%), and less than 17% of respondents indicated that they were not physically active [32].

For the 3 cities, general conditions are very important (60-90%). Gdansk residents live the longest among the surveyed cities. In Wrocław the figures are only slightly lower, while in Gorzow Wielkopolski people have the shortest lifespan. Among other reasons, due to the erection of more buildings at the expense of green areas and the continuous expansion of urban areas to

the suburbs, which involves the movement of cars to the centre, air quality in Polish cities is bad [33]. Among the projects in the group of general conditions, the vast majority are those for planting trees, shrubs, creating green spaces (meadows, parks), and using paints that absorb pollutants from the air. Sometimes these are in addition to projects on other issues. This shows how important it is for residents to take care of the environment, and with various investments they try to add something that will allow them to breathe better air. Comparing these 3 cities, Wrocław spends the most per capita.

Given that civic projects reflect the needs of the residents, it can be assumed that these needs will vary depending on one's place of residence. The results indicate that each city has a different percentage distribution for the 4 groups in the rainbow model. This is also the view of the Supreme Audit Office. It noted that in Spain, the themes of the projects mainly included urban infrastructure, while in the UK it was social tasks. The themes of the French PB included the following areas: public space, environment, road infrastructure, and culture and education. Ukrainian citizens, on the other hand, submitted more projects in health care and education. In the Canadian province of Ontario, it was common spaces and security projects [34].

For public health professionals, PB can become a tool to influence health disparities, and the health and well-being of a population. The researchers Hagelskamp, Schleifer, Rinehart, and Silliman, while analysing PB issues in the United States, developed 3 processes to help bridge health disparities. The first is a pathway focused on psychological reinforcement. The second mechanism is action through strengthening the civic sector alliance, and the third is about locating resources for communities with the greatest needs. In order for PB to meet this goal, the entire implementation is dependent on its course [35]. In some studies, PB has been proven to reduce infant mortality and poverty rates. There are no studies assessing the impact of this process on health and well-being for Poland [36].

In addition, PB has other advantages. For example, it strengthens civil society and instils greater trust in local government units [34]. For local officials, it can be a source of information about the needs of a region [37]. Participatory Budget has been evaluated positively in terms of its effectiveness, so we have good practices in Polish resources [34]. The aforementioned advantages should be an argument for introducing such a process as PB to municipalities or other cities. However, there is an important condition for PB to be popular among residents, which is honesty and openness. This is to be understood by the fulfilment by the employees of the offices of their duties, which is the implementation of the winning projects. In 2021, a guidebook for local governments was revealed, which presented the idea of replacing health policy programs with PB projects [38]. This innovative idea may be a practical solution for municipalities

in the county given the limited financial resources and the obligation to implement the PB [39].

The survey has limitations. As indicated in the methodology, one of the provincial cities was replaced by another, due to the lack of data during the period studied. Due to the war in Ukraine, which involved aid to that country and its people, the 2023 edition was not held in Olsztyn. The implementation of some winning projects from the last edition was extended for another year. For this reason, the 2022 edition was included [40]. Projects were selected for analysis that, in addition to health-related tasks, also included elements found in the exclusion criteria. For example, the project aims to develop a rest area including the creation of pedestrian alleys, while also including the installation of lighting and the installation of trash cans. These are also included in the cost. Because some projects were multi-purpose they went to different groups of determinants. Consequently, this affected the sum of costs of specific categories. Due to the lack of similar Polish studies, a comparison with the results of this work was not made.

## CONCLUSIONS

Based on an analysis of PB projects in Polish provincial cities, it can be concluded that aspects related to health in the broadest sense are important to their residents. A high percentage of projects include aspects that can affect the development and better functioning of residents. Depending on where they live, residents express different needs.

Seeing the potential of PB in reducing health inequalities, it would be worthwhile to perform such a study in the future. The starting point would be the question of what health policy conditions are needed for PB to meet its objectives. In order for PB to become an enabling tool, the health system must undergo reorganization. PB could bring a lot of benefits, because representatives of the public administration and public health specialists would be able to draw information regarding what the citizens lack. A good solution would be to create a separate PB category in the context of health. It would be a counterpart to the green PB, which is geared towards ecological and environmental topics. The aforementioned suggestions need to be built upon in further studies. The topics raised above could be another area of research. Looking at other countries that have studied PB in terms of health, it would be worthwhile to expand research on this topic in Poland.

## DISCLOSURE

The authors report no conflict of interest.

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#### AUTHORS' CONTRIBUTIONS

MW, MZ, ATF prepared research concept, design and collected data. MW, MZ analyzed data and wrote the article. ATF critically revised the article. All authors approved the final version of publication.