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Barbara Więckowska[1],
Monika Raulinajtys-Grzybek[2],
Violetta Korporowicz-Żmichowska[3],
Melanie Raczek-Żeromska[4]

One public health strategy to fit all needs? Regional Diversity in Health Policy

Abstract

In Poland, there are numerous diversity in the field of population health. They are often linked not only to socio-economic status but also to location. The disparities occur between regions as well as within regions. The disparities occur between regions as well as within regions. Eliminating these disproportions is also the responsibility of public authorities in the field of, for example, spatial policy in order to improve the living conditions of the community, including improving the health of the population. The aim of this study is to attempt to determine whether there are differences in health in spatial terms, especially differences between cities with county rights, in connection with health programs

[1] Szkoła Główna Handlowa w Warszawie, Kolegium Ekonomiczno-Społeczne, Instytut Gospodarstwa Społecznego, Zakład Innowacji w Ochronie Zdrowia, Warszawa, Polska, e-mail: barbara.wieckowska@sgh.waw.pl, https://orcid.org/0000-0002-1811-2583.

[2] Szkoła Główna Handlowa w Warszawie, Kolegium Nauk o Przedsiębiorstwie, Katedra Rachunkowości Menedżerskiej SGH, Warszawa, Polska, e-mail: mrauli@sgh.waw.pl, https://orcid.org/0000-0002-2451-8061.

[3] Szkoła Główna Handlowa w Warszawie, Kolegium Ekonomiczno-Społeczne, Instytut Gospodarstwa Społecznego, Zakład Innowacji w Ochronie, Warszawa, Polska, e-mail: violetta.korporowicz@sgh.waw.pl, https://orcid.org/0000-0001-5582-1373.

[4] Szkoła Główna Handlowa w Warszawie, Kolegium Ekonomiczno-Społeczne Instytut Gospodarstwa Społecznego Zakład Innowacji w Ochronie Zdrowia, Warszawa, Polska, e-mail: mracze@sgh.waw.pl, https://orcid.org/0000-0002-8583-3823.

implemented by these cities. For the purposes of this study, we analyzed health policy programs that received a positive or conditionally positive opinion from the President of the Agency for Health Technology Assessment and Tariffication and were implemented in the year 2020. The findings have demonstrated significant variations in the number of health programs both between regions and within individual regions, underscoring the need for a nuanced and tailored approach to public health strategies.

Keywords: public health, health policy, population health, regional differences, healthy cities

JEL codes: I150, I14, H7, R12, R11

Jedna strategia zdrowia publicznego odpowiadająca wszystkim potrzebom? Regionalne zróżnicowanie w polityce zdrowotnej

Abstrakt

W Polsce istnieje duże zróżnicowanie w zakresie zdrowia populacji. Często są one powiązane nie tylko ze statusem społeczno-ekonomicznym, ale także z lokalizacją. Dysproporcje występują pomiędzy regionami, a także wewnątrz regionów. Likwidowanie tych dysproporcji należy także do obowiązków władz publicznych w zakresie np. polityki przestrzennej w celu poprawy warunków życia społeczności, w tym poprawy zdrowia ludności. Celem pracy jest próba ustalenia, czy istnieją różnice w stanie zdrowia w ujęciu przestrzennym, zwłaszcza pomiędzy miastami na prawach powiatu, w powiązaniu z realizowanymi przez te miasta programami zdrowotnymi. Na potrzeby niniejszego badania przeanalizowaliśmy programy polityki zdrowotnej, które uzyskały pozytywną lub warunkowo pozytywną opinię Prezesa Agencji Oceny i Taryfikacji Technologii Medycznych i zostały wdrożone w 2020 roku. Wyniki wykazały istotne zróżnicowanie w liczbie programów zdrowotnych zarówno między regionami, jak i w obrębie poszczególnych regionów, podkreślając potrzebę zróżnicowanego i dostosowanego podejścia do strategii zdrowia publicznego.

Słowa kluczowe: zdrowie publiczne, polityka zdrowotna, zdrowie populacyjne, zróżnicowania regionalne, zdrowe miasta

Kody klasyfikacji JEL: I150, I14, H7, R12, R11

Introduction

In Poland, the level of population health varies greatly, and the existence of these inequalities is the primary barrier to achieving health equity. These are often linked not only to socio-economic status but also location, with disparities occurring between,

as well as within, regions. Eliminating these disproportions is also the responsibility of public authorities, for example in the field of spatial policy to improve the living conditions of the community, including improving the health of the population, because the conditions for the smooth functioning of society should function well. They make it possible to intervene in those frameworks of public life where distribution and market mechanisms operate automatically and are not effective regulators of social organisations.

Health disparities shape diverse health needs. The World Health Organization defines health needs as " […] disruptions in health or health well-being that require intervention in the form of medical and rehabilitative actions or social assistance, as well as preventive measures" (Topór-Mądry et al., 2002: 15). These disruptions require assessment, which is done through the diagnosis of health needs, providing information about both the level of satisfaction of health needs and unmet needs. It then becomes a source and impulse for changes, for example in the provision of medical services.

Health disparities are part of social inequalities, which arise from unequal access to resources such as income, wealth, consumption, and the level and quality of education. Health status inequalities resulting from socio-economic status, including the education level, have been relatively well researched (Matsuyama et al., 2011: 229–236), with the results of these studies confirming the significant role of education and training in shaping health resources (Floyd et al., 2007: 1–8).Therefore, people with higher levels of education, often with higher incomes, can expect to live longer than those with lower socio-economic status. The essence of this phenomenon seems to lie in the fact that better-educated people invest more in their knowledge, which affects changes in health attitudes and behaviors (Mayer et al., 2011: 59–60).

Research on health disparities also raises the spatial aspect, analysing and examining the necessary principles for achieving regional development goals. In this aspect, there is no clear, universally understood and accepted opinion on how health competencies are shaped to reduce health inequalities between regions (Stiglitz, 2015: 135).

One study indicating health disparities, conducted in an educational context, with consideration of spatial-regional differences, is HLS-EU-Q (Sørensen et al., 2015: 1053–1058). The results of this study showed that the average rating of variations in health behaviour is significant between countries, with the highest level of skills observed in the Netherlands, and the lowest in Bulgaria. In Poland, this was at the average (*Poles about their health and health-promoting behaviours and activities*, 2012), with health differences relating to the place of residence (Zybała, 2019: 107–109).

The least favourable living environment in Poland are the smallest cities, with fewer than 5,000 inhabitants, whose residents have the shortest life expectancy,

while, on average, the longest life expectancy is among residents of the largest cities. However, there are significant differences between cities; for example, in Łódź, men live to be 70 years old, and women live to be 79.4, while in Warsaw, men live to be 76.1, and women live to be 82.3. In 2021, men in the smallest cities lived on average around 2.6 years less than those in larger cities (Wojtyniak & Goryński, 2022: 75).

Disparities in health generate diverse health needs, and the needs of society continue to grow, seeming to be almost unlimited. However, the goal is not to provide an excess of health goods and services to everyone, but to provide them when and where needed, and to those who need them, as there are always some limitations in the provision of medical services. These needs should, therefore, be accurately recognised. The phenomenon of health needs can be diagnosed using economic tools and methods, such as the number and cost of provided medical services and the cost of benefits. Such diagnosis is essential, as it is necessary to first understand the need to satisfy it. The goal is for the needs to be visible, perceptible, and felt in the implementation of health practices, which include, among others, meeting these needs. Since health needs are determined not only by medical factors but also by the policies implemented at all levels of society, effective interventions are required in numerous sectors and areas of social life, for example through implemented health programmes.

A review of the literature indicates a lack of research and studies on the degree of disparities in the implementation of regional health policy objectives, so the aim of this study is an attempt to determine whether there are differences in health in spatial terms, especially differences between cities with county rights in reference to health programmes implemented by these cities.

Health Policy Programmes and Actions Under the National Health Programme

In principle, healthcare services in Poland are funded by the National Health Fund (NFZ), a single payer, from funds collected through contributions to universal health insurance. At the same time, to complement the payer, the legislator allows local self-governments to initiate and carry out activities in the field of health. In Poland, there are two instruments that allow local government units to influence the health needs of the local community: health policy programmes and actions carried out under the National Health Programme (NHP).

Health policy programmes are defined as a set of planned and intended healthcare activities assessed as effective, safe and justified, enabling the achievement of

specified goals within a set timeframe. These goals involve identifying and addressing specific health needs and improving the health of a particular group of beneficiaries. Such programmes are developed, implemented, managed and financed by the Minister or a local government unit (Act of 27 August 2004 on healthcare services financed from public funds; Journal of Laws 2022, item 2561, as amended).

Programmes prepared by local government units undergo formal evaluation by the Agency for Health Technology Assessment and Tariffication, and can be implemented after receiving a positive or conditionally positive opinion.

Health policy programmes particularly address:

1. Significant epidemiological phenomena.
2. Significant health issues affecting an entire or specific group of beneficiaries, with existing possibilities for the elimination or reduction of these issues.
3. Implementation of new medical procedures or preventive measures aimed at a defined target population with a specific disease or health issue.

It should be emphasised that a local government unit can apply for funding from the regional branch of the National Health Fund to support health policy programmes in the provision of healthcare services listed in the guaranteed benefits schedule, up to the following limits: 80% of the funds allocated for programmes of a local government unit with a population not exceeding 5,000 residents, and 40% of the funds allocated for programmes of a local government unit with a population exceeding 5,000 residents.

The second instrument for the local governments – the National Health Programme (NHP) – was established by the Council of Ministers in 2021, concerning the activities for the years 2021–2025 [10]. The NHP is a document established to implement public health policy and is based on the cooperation of government administration bodies, local government units and other entities (e.g. NGOs), and is established for a period of not less than 5 years. Currently, the main goal of the 2021–2025 NHP (Regulation of the Council of Ministers of 30 March 2021 on the National Health Programme for 2021–2025; Journal of Laws, item 642) is to increase the number of healthy life years and reduce social health inequalities (while the operational objectives include: prevention of overweight and obesity, addiction prevention, promotion of mental health, environmental health and infectious diseases, as well as demographic challenges).

Actions carried out are reported in a database that contains public information about the health situation of the population and the implementation of health programmes for purposes of disease prevention and health promotion in Poland (*ProfiBaza*).

Methodology

For the purposes of this study, we analysed health policy programmes that received a positive or conditionally positive opinion from the President of the Agency for Health Technology Assessment and Tariffication and were implemented in the year 2020 (if a programme received a positive opinion and was implemented for e.g. three years, including 2020, it was taken into account). We also considered actions carried out within the National Health Programme (NHP) in 2020 by cities with county rights (data on the implementation of such actions by central authorities and ministries was excluded). ProfiBaza (www.profibaza.pzh.gov.pl) was used to conduct the analysis, and the year 2020 was chosen for analysis due to the fact that it was the last year before the start of the new implementation period of the National Health Programme (planned for 2021–2025).

Despite differences in the way programmes are accepted for implementation and funding, the objectives of health policy programmes and health programmes (actions within the NHP) are identical. A decision was therefore made not to assign weights to any type of programme, and to analyse them collectively. The initiative to implement a programme or actions within the NHP lies with local government units, with the data allowing for an analysis of the engagement of cities with county rights in health-related activities.

For the defined input parameters, 2614 health policy programmes and actions within the NHP were identified and grouped into 15 categories (Table 1). The categorisation was done independently by two experts based on the programme name, and for any categorisation discrepancies, the experts reached a consensus during a meeting.

Table 1. Classification of Health Policy Programmes and Health Programmes

Group name	Description
Actions to Reduce Lifestyle Diseases (A)	Actions to prevent and treat breast cancer, cervical cancer, and other types of cancer, as well as diabetes, cardiovascular diseases, and addressing posture issues.
Actions to Reduce Sensory Organ Diseases (B)	Actions to reduce diseases of the eyes and ears, as well as oral diseases. Also, programmes and initiatives aimed at integrating blind and visually impaired individuals, as well as actions to create infrastructure for providing healthcare services in school dental offices.
Actions to Reduce Respiratory System Diseases (C)	Actions to reduce respiratory diseases, including infectious respiratory diseases, including influenza vaccination programmes, early detection programs for tuberculosis, asthma, chickenpox, and cystic fibrosis, as well as programmes aimed at preventing the spread of the SARS-CoV-2 virus. Also, pneumococcal vaccination programmes and prevention of meningococcal infections.

Group name	Description
Actions to Reduce Infectious Diseases (D)	Prevention and control of infections and infectious diseases other than respiratory diseases, including programmes focused on the prevention of venereal diseases, infection prevention, and testing for HIV/AIDS, preventive screening programmes for the diagnosis of Lyme disease, and health education on tick-borne diseases. Additionally, actions aimed at detecting hepatitis C (HCV) infection.
Actions to Reduce Mental Disorders and Nervous System Conditions (E)	Actions to improve the mental health of youth, interventional psychological support, initiatives to assist children with ADHD and their families. Also, programmes involving the operation of sheltered housing for individuals with psychiatric disabilities. Furthermore, programmes to help patients with Parkinson's disease, including neurological consultations, actions for individuals with Alzheimer's disease, and diagnostic-therapeutic actions for children with neurodevelopmental disorders (e.g., FASD) exhibiting school and behavioural difficulties.
Health Promotion Activities (F)	Actions to reduce diseases and promote health.
Actions to Improve Reproduction (G)	Subgroup 1: Actions supporting procreation (educational, in vitro fertilisation treatment for infertility). Subgroup 2: Actions in the field of perinatal care (focused on prenatal prevention and education, especially organising classes within maternity schools), breastfeeding, healthy infant nutrition, as well as psychological support dedicated to parents.
Support for Persons with Disabilities (H)	Actions focused on caregiving services for families with disabled children, developmental stimulation programmes for disabled children and those at risk of disability, along with involving families in implementing home-based rehabilitation programmes, conducting therapeutic-rehabilitative activities (including sports activities for individuals with disabilities), social activation, and preventing social exclusion.
Support for Rehabilitation (I)	Rehabilitation (uncategorised within other categories).
Actions to Reduce Violence and Addictions (J)	Prevention of addictions and risk behaviour (health promotion, sober lifestyle, addiction prevention, therapeutic programmes for addicted individuals, social reintegration programmes), as well as violence prevention (reducing the risk of domestic violence, preventing online violence, support programmes for individuals experiencing violence, and procedures supporting obtaining a blue card).
Palliative and Hospice Care (K)	Actions aimed at providing additional healthcare services in the field of hospice and palliative care, operating hospices, and conducting educational activities to help terminally ill patients.
Actions for Environmental Protection (L)	Programmes dedicated to shaping an environment conducive to health, including asbestos removal, air quality monitoring, promoting ecological energy sources, and promoting ecological ideas.
Access to Healthcare Services (M)	Programmes related to telecare, the development of home care for chronically ill individuals, mobile medical aid points, optimising pharmacotherapy, purchasing personal protective equipment and medical equipment.
Other Actions (N)	Other actions not covered by the previous groups. Infrastructure projects aimed at building or expanding activity zones, playgrounds, pedestrian paths, bicycle lanes (including pedestrian-cycling paths), sports halls, and ice rinks.
Actions for Infrastructure Improvement (O)	Actions aimed at providing additional healthcare services in the field of hospice and palliative care, operating hospices, and conducting educational activities to help terminally ill patients.

Source: own compilation.

As infrastructure projects are related to the construction of facilities – often of a sports or entertainment nature – they have only an indirect impact on the health of residents and have therefore been excluded from further analysis. Additional

arguments supporting this decision include the fact that they are not continuous but rather isolated actions, meaning that their absence in a given year in a city may result from the completion of investments in the recent past, which makes it difficult to draw conclusions about the involvement of cities in this activity.

The analysis was conducted at the national level, as well as for individual voivodeships (provinces). Due to its highest activity in project implementation, Warsaw was singled out as a separate category, resulting in a total of 17 datasets in the analysis (16 provinces and Warsaw). Within individual provinces, the number of cities with county rights varies, and the size of individual provinces also varies.

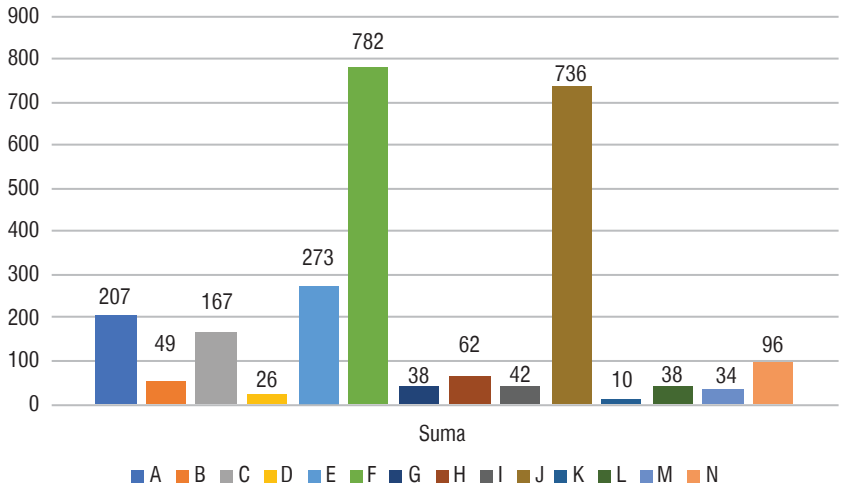
Individual provinces were analysed in terms of the number of implemented programmes and the average expenditure per resident. The first variable is seen as partially dependent on the number of cities with county rights in a province, as well as on the number of residents in those cities. The second variable – average expenditure per resident – allows for comparisons between provinces.

To ensure data comparability, it was standardised in relation to the average expenditure per resident and in relation to the relative frequency of project implementation in individual categories through the use of ranking. Rank 1 means that a given category of programmes is the most frequent or that expenditure in this category was the highest. Subsequent ranks are awarded according to the same principle. In a situation where two categories have the same average expenditure per resident (rounded to two decimal places) or the same number of programmes, a rank directly after the duplicated rank is not assigned (for example, with two categories of programmes ranked in 5th place, the next category will receive rank 7). In situations where no programmes are implemented in a given category, no rank is assigned.

Results

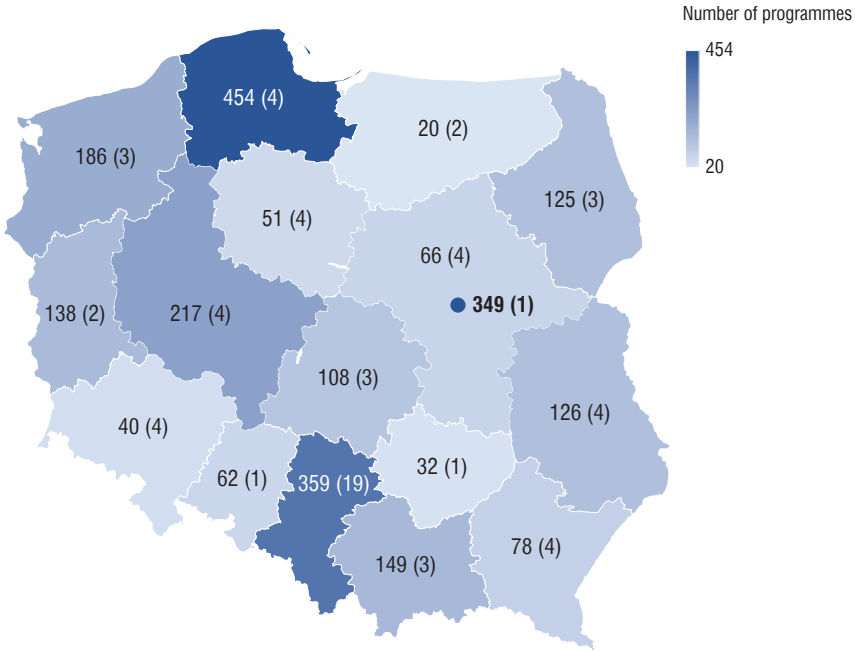
At the national level, the most actions are carried out in groups F (health promotion) and J (violence and addiction) – in the case of both groups, over 700 actions were carried out throughout the country in 2020 (Figure 1). The next in line are actions within groups E (mental disorders and nervous system) and A (lifestyle diseases) – over 200 actions across the country. In total, nearly 80% of all actions are implemented in these four categories.

Figure 1. Number of programmes by category (Poland 2020)



Source: own compilation.

Figure 2. Number of programmes by voivodeships and the number of cities with county rights implementing these programmes (2020)



* The number in parentheses () indicates the number of cities with county rights.

Source: own compilation.

The highest number of activities are implemented in the Pomorskie Voivodeship (by 4 cities with county rights), in the capital city of Warsaw, and in the Śląskie Voivodeship (by 19 cities with county rights) (see Figure 2). The fewest activities are implemented in the Warmińsko-Mazurskie Voivodeship (2 cities), Świętokrzyskie Voivodeship (1 city), Dolnośląskie Voivodeship (4 cities – although in 2020, activities were carried out by 1 city), Kujawsko-Pomorskie Voivodeship (4 cities), and Opolskie Voivodeship (1 city).

In individual regions, there is consistency in the popularity of activities in the most frequently implemented groups in Poland. Table 2 shows the relative frequency of programmes within a given category by assigning consecutive ranks – rank 1 indicates the category of programmes implemented most frequently.

Table 2. Ranking of the number of programmes by voivodeships and categories (2020)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
DOLNOŚLĄSKIE	2	6	7	7	3	4	4			1	7			
KUJAWSKO-POMORSKIE	4	6	2	8	8	1	6	5		3		8	8	8
LUBELSKIE	3	5	6		3	2				1	7			
LUBUSKIE	4		4	10	3	2	8	6	8	1				6
ŁÓDZKIE	5	10	5		4	2	8	3	8	1			5	10
MAŁOPOLSKIE	2	10	3		4	1	10	5	9	6	12	7	8	12
MAZOWIECKIE	4	6	3	7	4	2	7		7	1	7		7	
OPOLSKIE	7	7	3		3	2	7		6	1		5		7
PODKARPACKIE	4		4	6	3	1			6	2		3		8
PODLASKIE	4	8	5	11	3	2	12	6	8	1	12	8		7
POMORSKIE	5	10	6	9	3	1	7	12	7	2	14	13	11	4
ŚLĄSKIE	3	6	4	12	5	1	10	7	9	2	14	8	10	12
ŚWIĘTOKRZYSKIE	5		4	7	3	1	7		7	2	7		6	
WARMIŃSKO-MAZURSKIE	4		2		4	2				1				
WARSAW	5	10	6	7	3	1	12	7	12	2		7	10	4
WIELKOPOLSKIE	3	9	6		4	1	10	10	8	2	10		7	5
ZACHODNIOPOMORSKIE	4	9	5	11	3	1	8	7	10	2	11	11	11	5
POLAND	**4**	**8**	**5**	**13**	**3**	**1**	**10**	**7**	**9**	**2**	**14**	**10**	**12**	**6**

Source: own compilation.

Actions for the promotion of health (Category F) were the most frequently implemented group

of programmes in nine regions, while in the remaining seven regions they ranked second. Only in the Dolnośląskie region was the frequency of these programmes

lower, where they were ranked fourth (ex aequo with the category of actions for improving procreation (G)).

Actions to reduce violence and addiction (Category J) were in first place in eight regions, and second place in the remaining seven, with their popularity slightly lower in the Małopolskie (rank 6) and Kujawsko-Pomorskie (rank 3) regions.

Similarities between individual regions and the entire country are also evident in the popularity of actions to reduce civilisation-related diseases (Category A), which ranked second in two regions, third in three, and fourth in seven regions.

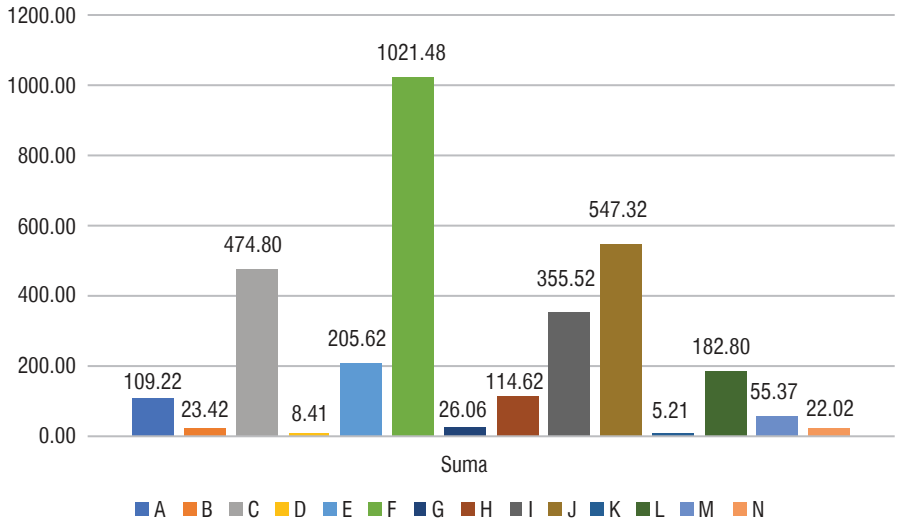
Some categories of programmes were only implemented in certain voivodeships. Programmes in the category of actions for environmental protection (Category L) were less frequently reported, with actions indicated in nine regions, while in ten regions, actions to support people with disabilities (Category H), actions related to palliative and hospice care (Category K), and actions to improve access to healthcare services (Category M) were implemented.

The coverage of categories in individual regions was also varied, with actions implemented in almost all categories in the Kujawsko-Pomorskie, Małopolskie, Podlaskie, Pomorskie, Śląskie, Wielkopolskie and Zachodniopomorskie voivodeships, and in Warsaw. The smallest coverage of programme categories was observed in the Warmińsko-Mazurskie (programmes were implemented in 5 categories), Lubelskie (7 categories), Dolnośląskie (9 categories), and Podkarpackie (9 categories) voivodeships. The Dolnośląskie and Warmińsko-Mazurskie voivodeships also had the lowest total number of programmes.

Analysing the average expenditure per capita (Figure 3) at the national level, the highest average expenditure per capita was incurred for actions promoting health (Category F) ($\overline{x} = 1021.48$, $\sigma = 58.69$), in the category of actions to reduce violence and addiction (Category J) ($\overline{x} = 547.32$, $\sigma = 38.71$), actions to reduce respiratory system diseases (Category C) ($\overline{x} = 474.80$, $\sigma = 35.91$), and actions supporting rehabilitation (Category I) ($\overline{x} = 355.52$, $\sigma = 34.64$). Among these categories, Categories F, J, and C were the most frequently implemented, generating the highest expenditure per capita.

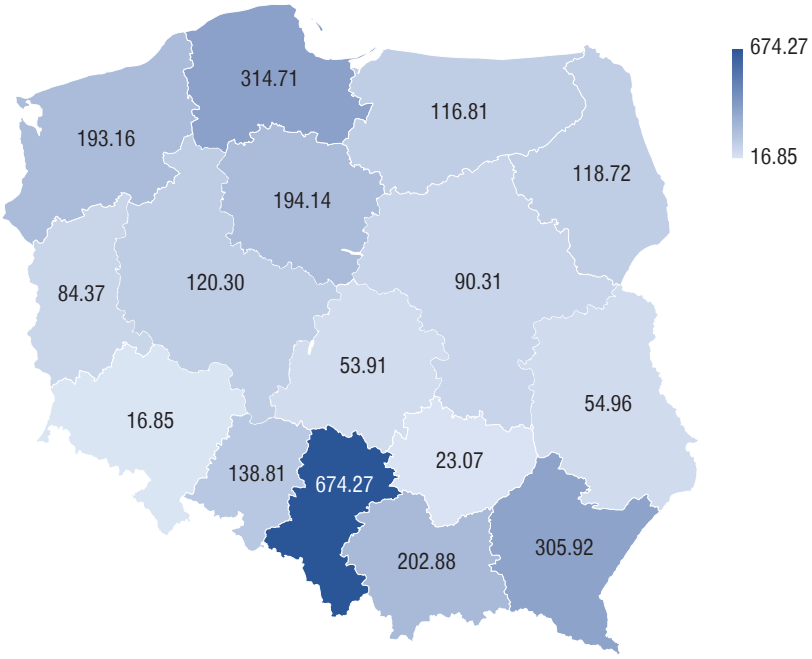
The highest level of expenditure was recorded in the Śląskie voivodeship (674.27 PLN/citizen) (Figure 4). Warsaw, as well as the Pomorskie and Podkarpackie voivodeships, follow in the rankings. Among these regions, three overlap with the regions where the most programmes are also implemented, with an exception being the Podkarpackie voivodeship, where the number of programmes (78) placed it in 11th place. The high per capita expenditure results from three programmes (one each in Categories C, L, and F), with a combined expenditure of 103.55 PLN/citizen.

Figure 3. Average expenditure per capita on programmes by category (2020)



Source: own compilation.

Figure 4. Average expenditure per capita on programmes by voivodeship (2020)



Source: own compilation.

In individual regions, there is a certain consistency in the popularity of actions in categories with the highest average costs in Poland. Table 3 shows the ranks of individual programme categories by average costs.

Table 3. Ranking of the average per capita expenditure on programmes by voivodeships and categories (2020)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
DOLNOŚLĄSKIE	2	4	9	7	5	6	3			1	8			
KUJAWSKO-POMORSKIE	4	6	3	12	9	1	7	8		2		11	5	10
LUBELSKIE	4	5	7		3	2				1	6			
LUBUSKIE	8		1	10	7	3	9	5	4	2				6
ŁÓDZKIE	9	10	6		5	3	7	4	8	1			2	10
MAŁOPOLSKIE	8	11	4		6	1	12	3	9	5	10	2	7	13
MAZOWIECKIE	4	5	1	11	8	2	10		9	3	7		6	
OPOLSKIE	6	9	4		8	1	7		2	5		3		10
PODKARPACKIE	7		3	8	6	2			1	5		4		9
PODLASKIE	6	13	7	12	5	1	11	4	3	2	8	10		9
POMORSKIE	6	10	5	12	7	1	8	11	2	3	13	14	4	9
ŚLĄSKIE	6	9	2	10	5	3	13	7	8	1	14	4	11	12
ŚWIĘTOKRZYSKIE	7		1	6	2	4	5		8	3	10		9	
WARMIŃSKO-MAZURSKIE	4		1		5	3				2				
WARSAW	5	8	7	10	1	2	6	11	12	3		4	13	9
WIELKOPOLSKIE	6	11	4		9	1	8	10	3	2	12		5	7
ZACHODNIOPOMORSKIE	7	10	6	13	3	1	9	4	2	5	12	14	11	8
POLAND	**8**	**11**	**3**	**13**	**5**	**1**	**10**	**7**	**4**	**2**	**14**	**6**	**9**	**12**

Source: own compilation.

Actions for the promotion of health (Category F) were among the three categories with the highest average costs in a total of 15 regions, with actions to reduce violence and addiction (Category J) in 13 regions, and actions to reduce respiratory system diseases (Category C) were among the three categories with the highest average costs in a total of 7 regions. In Poland as a whole, expenditure on actions in Categories F, J and C accounted for 65% of all expenditure, and had the largest share in the Warmińsko-Mazurskie (96%), Kujawsko-Pomorskie (91%), Mazowieckie (88%) and Lubelskie (83%) voivodeships.

Discussion

Caring for harmonious social development requires reducing numerous disparities not only between regions but also within regions, especially disparities related to the health of communities. This involves minimising differences in access to healthcare services, including some social infrastructure in the healthcare sector, as well as educational services, including health education, in regions, which pertains to diagnosing the current state regarding the number and directions of actions to meet health needs. This issue is associated with the implementation of a health policy, as well as spatial and educational aspects, which can manifest as variations in expenditures on health policy programmes and health programmes (actions within the National Health Programme).

Understanding these variations is crucial when it comes to making correct decisions regarding the implementation of health policy programmes to meet health needs, with a goal to make this fulfillment tangible in health practice, among other things, by communities and local governments. This article falls within the research stream on rational satisfaction of health needs, which should ultimately reduce disparities in the health of communities.

Actions for health promotion (Category F) were the most frequently implemented health programmes in voivodeships in Poland, encompassing both preventive actions and those specifically aimed at promoting health, while actions aimed at reducing the burden on the healthcare system through prevention and early disease detection align with the health needs of the population. It's important to note that these actions serve as an investment that pays off in all other areas of the healthcare system. According to data from Poland in 2020, there were 58,533 (13.9%) excess deaths (the difference between the actual and expected number of deaths, 478,878 and 420,325, respectively) (Excess mortality in Poland in 2020). In 2020, the excess number of deaths resulted mainly from the COVID-19 pandemic, but also from other diseases, which was due to limited access to the healthcare system and its high workload. These are deaths from undetected chronic diseases and deaths of patients whose treatment and health monitoring were disrupted.

It should be emphasised that alcohol consumption accounted for a loss of 1,030,000 years of healthy life (Disability Adjusted Life Years – DALY) in 2019. Alcohol consumption in 2019 stood at 10.6 liters per person (aged 15 and over) and has remained at a similar level for around 5 years. It can therefore be inferred that there is a justifiable frequency of actions to reduce violence and addiction (Category J). This is the second-ranking category in terms of the most frequently implemented health

programmes, also in terms of average costs on a national scale, and these actions may be a response to the increasing mortality from preventable diseases associated with alcohol consumption.

According to data from the Central Statistical Office (GUS) in 2019, over 4% of the Polish population (1 874.9 thousand people) received treatment in outpatient clinics for people with mental disorders and substance addiction (*Demographic Yearbook 2021*, 2022: 375), which justifies the need for health programmes focused on actions aimed at reducing mental disorders and diseases of the nervous system (the third ranking in terms of frequency).

At the same time, there are voivodeships in Poland where some categories of programmes are not implemented (see Table 2 and 3). An example are programmes related to "Environmental Protection Activities" (Category L). In this category, programmes most often address the protection of air quality, such as "Improving air quality – replacing heat sources" or the "Clean air programme." Voivodeships that have not initiated work in this area (there are currently nine such voivodeships), such as Łódzkie, Dolnośląskie, or Warmińsko-Mazurskie, have very high death rates from respiratory system diseases (ICD-10 categories J00-J98) – respectively: 98.8, 86.5, and 89.1 (per 100 000 inhabitants in 2020) (*National cancer registry. Reports*). High death rates from respiratory diseases in these voivodeships are also noted in the "National Cancer Registry," and this applies to most age groups and from such voivodeships as Dolnośląskie, Lubelskie or Świętokrzyskie (*National cancer registry. Reports*). Polluted air is the cause of lung or bronchial cancer, as well as asthma (Ozeim & Jingjing, 2016: 138–143). Lung cancer is the second most common cause cancer among men (responsible for 18% of deaths among all types of cancer), and the third most common cancer among women (11%) (OECD, 2023). There has been an almost 7-fold increase in the number of deaths due to lung cancer among women, and almost 3-fold among men in the last 40 years (Wojtyniak & Goryński, 2022: 249). The increase in the number of patients obtaining prescriptions for asthma medicines increased by 12.5% between 2014 and 2020 (NFZ on health. Astma, 2024). Air pollution in the form of fine particulate matter (PM2.5) and ozone exposure accounted for an estimated 8% of all deaths in 2019 (over 30 000 deaths) – twice the proportion estimated for the EU (OECD, 2023).

Another category of actions, in which voivodeships do not implement health programmes, pertains to "Supporting People with Disabilities" (Category H), with seven voivodeships falling into this category, including Podkarpackie, which has the highest rate in Poland for congenital developmental abnormalities and chromosomal aberrations (ICD-10 categories Q00-Q99), with a mortality rate of 3.4 (per 100 000 inhabitants). There are no actions in this category in this voivodeship.

Similarly, in the Mazowieckie or Opolskie voivodeships, where death rates in this regard are also high, at 2.4 (*Demographic Yearbook 2021*, 2022: 375), no programmes are being implemented to support people with disabilities.

Furthermore, the largest number of people with a disability or incapacity certificate per 10,000 inhabitants in 2021 was in the Świętokrzyskie and Podkarpackie voivodeships, with rates exceeding 700 people, as well as Lubelskie and Warmińsko-Mazurskie (673 and 716) (GUS, 2021). In the mentioned voivodeships, no actions are taken in the Category H. However, it should be noted that the Opolskie voivodeship, despite the lack of programmes dedicated to people with disabilities, has the lowest value of the indicator in Poland, at 472 (*Too few places in facilities and too little money for dying patients).*

Programmes aimed at increasing "access to healthcare services" (Category M) were not implemented, for example, in the Lubelskie and Lubuskie voivodeships. In these voivodeships, a relatively low life expectancy for both men and women was observed, at 73.9 and 82.4, and 72.9 and 81.0, respectively. In contrast, in the Małopolskie voivodeship, where life expectancy is relatively high, at 75.3 for men and 82.7 for women, a relatively high number of programmes from Category M were implemented (ranked 7th) in 2020–2021.

The variance between voivodeships is also shown by programmes with relatively few implementations and minimal financial expenditures. Surprisingly, palliative and hospice care programmes (Category K) ranked the lowest in terms of both the number and expenditures of programmes, with only moderate rankings in four voivodeships. The issue of access to services financed by the payer in this area is often raised in public debate and concerns all regions of Poland (*Too few places in facilities and too little money for dying patients*). Palliative and hospice care is also indicated as an area with inadequate coverage within the guaranteed healthcare services basket covered by public funds (*National Transformation Plan*, 53).

The list of diseases qualifying for palliative and hospice care services is very narrow, with 89% being individuals with oncological diagnoses, which significantly deviates from WHO standards (the number of patients with oncological diagnoses should be around 34%).

There is little interest (second to last place in the ranking for both indicators) among voivodeships in programmes focused on preventing and combating infectious diseases other than respiratory diseases (Category D). Programmes in this category include the prevention of venereal diseases, infection prevention, and testing for HIV/AIDS and the hepatitis C virus (HCV), as well as preventive screening for Lyme disease and health education on tick-borne diseases. The higher placement of these types of programmes in the middle values of the ranking (in both catego-

ries) in the Świętokrzyskie, Podkarpackie, and Dolnośląskie voivodeships may have led to the detection of asymptomatic patients. Currently, these voivodeships (along with Łódzkie) are among the top four voivodeships in Poland, with rates of asymptomatic patients at 78%, 52% and 52%, respectively (*Health need maps for communicable diseases* – HIV).

Conclusion

In conclusion, this study sheds light on the regional disparities in health policy implementation, particularly within cities holding county rights in Poland. The findings demonstrate significant variations in the number of health programmes both between and within individual regions, underscoring the need for a nuanced and tailored approach to public health strategies. While our study provides valuable insights into these disparities, we acknowledge the limitations of our one-year analysis. To further enhance our understanding and develop more effective policies, future research should delve into potential causal links between the number of programmes and health needs, as well as their impact on health indicators over time.

To address these issues comprehensively, we recommend conducting a longitudinal follow-up study that spans multiple years, which could provide a deeper understanding of the dynamics between health programmes, regional health needs, and health outcomes, ultimately guiding the development of more targeted and evidence-based public health strategies. In doing so, we can work towards ensuring that public health initiatives are better tailored to the different needs of various regions, ultimately promoting more equitable health outcomes across the country.

Author Contributions

All the authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

Conflict of Interest

The author (s) declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Ethics Statement

The authors certify that the research published in the text was carried out in accordance with the research ethics of the affiliated university.

Research Data Availability Statement

The original contributions presented in the study are publicly available.

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