

Dorota Sikora-Fernandez, Danuta Stawasz

The Asymmetry of Access to Public Data

Abstract

Objective: This paper critically investigates the phenomenon of asymmetrical access to public data, a growing issue in our increasingly digitised society. Its objective is identify the root causes of asymmetry in access to public data and to propose solutions that would promote greater transparency and fairness, and foster citizen participation in public life.

Research Design & Methods: The research section includes the analysis of the users of the Internet in the context of using government websites or applications by income group, age group, and place of residence. Then, the R-Pearson linear correlation analysis was used to examine the relationship between the mentioned variables.

Findings: The study shows the presence of a digital divide within Poland, attributing its existence to several factors including income, educational attainment, residential location, and age. This divide encompasses not merely the accessibility of digital networks but extends to the competence required to effectively utilize these resources. Furthermore, the research highlights a significant correlation between one's level of education and their proficiency in utilizing digital tools and conducting information searches on the internet.

Implications/Recommendations: To reduce asymmetry in access to public data, policymakers should focus on creating open, user-friendly data portals with standard formats and detailed metadata. Engaging in public consultations can tailor accessibility to community needs, while partnerships with educational and non-profit organisations can offer training to enhance data utilisation skills. Such strategies aim to democratise data access, ensuring it serves a broad and diverse audience effectively.

Contribution/ Value Added: The research confirms the existence of a digital divide in Poland, and some of the factors are income level, education, place of residence, and age. The gap is not only about access to the network, but also about the ability to use it. In addition, familiarity with digital tools and the ability to search for information online are strongly related to education level. Analysing the accessibility of public data in the context of income, we note that the higher the income, the higher the percentage of people using public administration online. The analysis also shows that older citizens, despite being the group least likely to use the Internet, have seen the greatest increase in regular Internet use over the studied period, in contrast to teenagers and young adults.

Article classification: research article

Keywords: public data; data asymmetry; data governance

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Dorota Sikora-Fernandez, corresponding author, University of Lodz, Faculty of Management, 22/26 Matejki Str., Lodz; e-mail: dorota.sikora@uni.lodz.pl; ORCID 0000-0002-4425-0437. **Danuta Stawasz**, University of Lodz, Faculty of Management, 22/26 Matejki Str., Lodz; e-mail: danuta.stawasz@uni.lodz.pl; ORCID 0000-0003-4643-9409

Introduction

Information in any organisation, institution, entity is – along with finances, things, and people – one of the basic resources used to achieve the goals of the institution. Its basic function comes down to giving managers the ability to assess the decision-making situation, and thus make rational decisions. The efficiency and effectiveness of the activities of an institution, organisation, or entity depends on the use of resources without unnecessary waste as well as on making the right decisions and successfully implementing them. In practice, it largely depends on having an adequate supply of information. Information should be accurate (accurately and reliably reflecting reality), timely (available at the time the manager is working out a decision and putting it into practice), complete (providing all the facts needed and at the right level of detail), and relevant (giving confidence that it is useful) (Griffin, 2004). The process of information management itself involves collecting, storing, retrieving, processing, and transmitting information, and in some situations making it public. Publicising refers primarily to the public's access to information of a public nature, which, by definition, should contribute to public sphere organisations taking actions consistent with the public interest.

Information is collected by various organisations, entities, institutions in different cross sections, at many levels of detail, etc. In spite of the acquisition of a lot of information by entities, in the relations between them, the phenomenon of asymmetry of information is often revealed, which translates into a disorder in the operation of the market, through inefficient allocation of resources. Information asymmetry (Akerlof, 1970; Stiglitz, 2004; Możdżeń, 2015) consists in unequal access to information important to the parties to a transaction, and in the case of the public sphere, unequal access to information of authorities at the level of the state, region, city, NGOs, business entities, public sector organisations, informal groups of citizens, residents, etc.

For several years, demand for access to public data has been growing due to the fact that it has become a key tool necessary for many stakeholder groups to understand the world and make informed and rational decisions in their interests. However, despite widespread recognition of the importance of public data, there are significant differences in access to it among different segments of society. One factor contributing to these differences is the digital divide, in which individuals or communities with limited access to the Internet or information and communications technologies (ICTs) are at a disadvantage when it comes to accessing public data. This divide is particularly prevalent in low-income communities, rural areas, and developing countries. In addition, monopolies or “data gatekeepers,” such as social media platforms and search engines, can control the availability of public data, creating asymmetry in the access to information.

Asymmetry in access to data in public administration refers to the unequal distribution of access to such data among organisations, public institutions, or even their individual organisational units, and it can arise for a variety of reasons, such as, for example, differences in technical capabilities, financial constraints, or a lack of clear guidelines for sharing data. Some organisations and public institutions may have better technical infrastructure and resources to manage and share data, while others may lack the necessary resources and expertise.

The consequences of unequal access to public data can be serious. They can not only affect the decision-making process in public administration entities, but also deepen social inequalities, hindering progress towards the development of a more democratic and civil society, as citizens will not be able to obtain the information necessary to hold public authorities accountable for achieving their goals. In addition, it will negatively affect cooperation between organisations,

public institutions, and – as a result of duplicate collection of the same data separately by different organisational units in public structures – will lead to the waste of resources and the generation of excessive costs. Another consequence of deliberately limiting access to public information in the broadest sense is the building of mistrust in public authorities and the progressive process of the alienation of formal and informal social groups, translating into reduced citizen participation in public life. Unequal access to public data can also limit scientific progress due to the lack of access to critical datasets necessary for scientific research. In addition, government policies and regulations can also create asymmetry in access to public data, e.g. for reasons of national security or privacy, limiting public access. In addition, some organisations and public institutions may provide preferential access to certain groups or other organisations, creating an imbalance of power in access to data.

This article revolves around the following research questions:

1. What are the main factors that create asymmetries in access to public data?
2. How do socioeconomic factors such as, e.g., income and education affect access to public data (Cendrowicz & Chrisidu-Budnik, 2022)?
3. What are the institutional barriers that limit access to public data?
4. What are the geographical and technological factors that affect access to public data?

Therefore, the purpose of this paper is to try to identify the root causes of asymmetry in access to public data and to propose solutions that would promote greater transparency and fairness, and foster citizen participation in public life. The availability of up-to-date, real, and useful information should be widespread and current, for this is a requirement for rational decision-making also in the case of a community self-organisation. The condition for real access to public information is the creation of mechanisms that would favour various entities (public and private spheres) interested in collecting and placing information in systems and sharing information with others (Wrana et al., 2014).

Literature review on public data asymmetry factors

Data-driven management is an approach in which decisions made must be supported by verifiable data. At its core is the belief that good-quality, complete data allows for more rational, effective decisions. W. E. Deming stressed that a person without data “is just another person with an opinion” (Jones & Silberzahn, 2016). However, the success of this approach depends not only on the quality of the data, but also on the effectiveness of its analysis and interpretation. This process contrasts sharply with decision-making based on gut feeling, instinct, tradition, or theory. In public administration, data-driven decision-making is beginning to take on particular importance in the face of the crises affecting the modern world. The COVID-19 pandemic, the war in Ukraine, as well as climate change and its negative effects on both the environment and socioeconomic development make it more likely that data collection and processing – and, consequently, rational decision-making based on data – will become more likely owing to huge advances in ICTs.

Public data is data produced and collected by public institutions, available to the public or with limited access. Understood in the category of ownership, it represents a wide range and can come from a variety of sources, such as, for example, Central Statistical Office (CSO), public records, reports and statements, official government and local government platforms, the Internet of Things (IoT), the results of public opinion polls, and many others. Despite the continuous work

of public authorities to improve the searchability, accessibility, interoperability, and reuse of digital resources, there is still a large gap or disparity in access to data (Verhulst & Young, 2022). At the same time, the field of this data is largely uncoordinated and associated with many problems. There are many factors that can cause asymmetries in access to public data, which can limit its utility, value, and impact. These asymmetries can occur at various levels – including individual, organisational, and societal levels – and can involve different stakeholders (Verhulst, 2022).

Despite the widespread presence of information asymmetry, it is noteworthy that existing public governance research lacks a thorough examination of this concept and its associated scholarly discussions. The absence of a methodical evaluation means that there is no clear consensus on the depth of understanding regarding information asymmetry within the realm of management studies. Presently, the comprehension of this concept relies on discrete sub-disciplines and various theoretical frameworks. Consequently, interpretations and applications of information asymmetry are prone to discrepancies, and a coherent framework to guide future inquiries is missing (Bergh et al., 2018).

Among the many reasons for unequal access to public data, the following are most often cited:

1. the digital divide, referring to the unequal distribution of access to the Internet and technology, and resulting from the insufficient digital competence of both the professionals who create information collections and the recipients of such information;
2. monopolies and “data gatekeepers,” which include large corporations, mobile operators, social media platforms, information search engines, and other technology companies that control large amounts of data and can restrict access to information;
3. government policies and regulations that restrict access to certain data or access for certain stakeholders (including censorship);
4. costs associated with collecting, processing, and publicising data;
5. the inefficiency of the management in public institutions of the very process of information management, which involves collecting, storing, retrieving, processing, and publicising information;
6. low level of education of the public, which translates into a low level of involvement in public affairs and, consequently, does not force organisations, public institutions, and other entities to disseminate public information;
7. other factors related to data collection and processing (format, quality, interoperability, etc.), and cultural norms related to data sharing.

Understanding these factors and their implications leads to a better design of strategies and policies that promote more equitable access to data. These factors are described in more detail below.

Digital divide

The digital divide is one of the most significant factors contributing to unequal and unfair access to public data. The term was originally defined by Allan Hammond (1997) in the United States. At the time, it referred to unequal access to the Internet and ICTs, with the result that some individuals or communities have limited or no access to data. This can create an imbalance of power in access to information, as individuals or communities without access to technology and the Internet may not be able to obtain the necessary data, analyse it, or use it effectively. The issue has now moved beyond access to technology and has expanded to include inequalities

in digital skills and how they are used. Indeed, there is a gap related to the control of digital data production tools and the appropriate context for using these tools (Rogers, 2016). The digital divide is particularly acute in marginalised communities, such as the economically vulnerable, rural communities and national minorities.

The variation in the understanding of the digital divide stems from the three levels of the concept proposed. The first level concerns simple access to technology. The second level encompasses operational skills in using the Internet, navigating and evaluating online information, communicating with others online, creating and sharing content, and how to use devices. This level illustrates the differences in reality faced by educated, affluent citizens compared to those with lower skills and material status, even when they have access to technology (Blomberg et al., 2021). The third and final level, on the other hand, is concerned with answering the question of why ICTs, initially considered as a tool for bridging social inequalities, actually contribute to their creation (Goedhart et al., 2019).

The digital divide and the resulting technological differences can, therefore, take many forms and result from the following:

- socioeconomic status – leading to information asymmetry between groups of different socioeconomic status;
- education – people with limited education may not have the appropriate digital skills required to navigate and use the vast amount of information available online, and may therefore have poorer access to public data or have difficulty understanding and interpreting it effectively, contributing to data asymmetry;
- age – which can shape the generational digital divide;
- location – rural and isolated areas often face challenges in accessing reliable and high-speed Internet connections. Inadequate infrastructure or the high cost of extending services to these areas can lead to a digital divide between urban and rural populations, exacerbating public data asymmetries;
- cultural and language barriers – their existence depends on the language in which the data is shared, as well as the organisational culture.

Monopolies and “data gatekeepers”

A data monopoly refers to a situation in which one entity, often a large corporation, has exclusive control over a significant portion of the data in a given industry or market. Data monopolies can arise for a variety of reasons, including network effects, economies of scale, and first-mover advantage. They can lead to concentrations of market power that can be used to stifle competition, limit innovation, and create barriers to entry for new players. “Data gatekeepers,” on the other hand, are entities that control access to and use of data within an ecosystem or specific platform. They often have significant influence over the flow of data and can use their control to dictate terms of access, use, and pricing to other market participants (Marty & Warin, 2020). Data gatekeepers can be private companies, public institutions, or other organisations that exercise control over critical data infrastructure such as Internet service providers (ISPs), search engines, and social media platforms.

Currently, the FAANG (Facebook, Apple, Amazon, Netflix, and Google) have more data about humanity than anyone had ever had in the past. Some of this data could be useful to public institutions, but the FAANG are nevertheless very strict about sharing information, and interested

parties often have to enter into partnerships based on contracts or technical dependencies to obtain it (The Power of Gatekeepers, web).

Although “data monopolies” and “gatekeepers” are separate concepts, in practice they often overlap. “Data monopolies” can also function as “gatekeepers,” using their control over data to influence the market and dictate terms to other players. Additionally, the available data may not reflect the full range of perspectives or experiences, as large corporations may not prioritise data collection on certain populations or topics. Understanding the interplay between data “monopolies” and their “gatekeepers” is essential to analysing the broader implications of these phenomena for innovation, competition, and consumer choice in the digital age.

Government policies and regulations

Implemented government policies and regulations play an important role in shaping access to public data, but they can also contribute to asymmetries in access. Restrictions on access can arise for a variety of reasons, e.g. sensitive defence, intelligence, or law enforcement information is often not made available to the public. Similarly, data protection laws impose restrictions on the disclosure of sensitive or personally identifiable information. While these measures serve important purposes, they can also create barriers to accessing valuable public data.

However, asymmetry in data access can be further amplified when government policies grant preferential access to data to certain groups or organisations while imposing restrictions on others. Such preferential treatment can disproportionately favour large corporations, academic institutions, or research organisations, exacerbating the power disparity in data access based on resource availability and institutional influence. In addition, the complexity and ambiguity of data-sharing policies and regulations can impede data access efforts. Inconsistent or unclear guidance on sharing protocols, ownership or licensing agreements can significantly impede access for researchers and organisations without legal or regulatory expertise. Consequently, this exacerbates the existing imbalance in access to data.

Addressing the asymmetry requires establishing clear and unambiguous guidelines for data sharing and access. Governments should strive to develop comprehensive policies that effectively balance privacy and data security issues with promoting open access to data for research, innovation, and the public interest. Collaboration among government agencies, researchers, and data users is essential to establish efficient processes that ensure fair and effective data-sharing mechanisms.

Management inefficiency in public institutions

There are many reasons for a significant impact on limiting the efficiency of governance in the public sphere. In the practice of organising and operating public administration, there is the politicisation of the authorities, the decision-making process, and the decisions themselves. The monopolistic nature of the operation of the public administration is not conducive to taking action in line with the public interest in every situation, and the public has no opportunity to change its choice of provider. The separation of the management function from the ownership function (organisations of the public sphere dispose of huge physical and financial assets, which are the property of all citizens of the country or regional, local communities) results in decisions regarding the management of assets being made outside the owner, and in principle he/she has no influence on these decisions. Such a solution “dilutes” in the practice of operation

of public organisations to some extent the responsibility for these decisions. The activities of public administration are primarily undertaken using public funds, which are not directly earned by the organisations of this sphere. The measure of management effects in public administration should be combined with the public good, which, in turn, is difficult to define in practice. It should also be mentioned here that there is a high degree of the formalisation of activities within public sphere organisations, determined by legislation, which results in officials' concerns about the legitimacy of decisions made and, consequently, contributes to the bureaucratic approach in solving many problems. In addition, control over the activities of public administration organisations is limited to the activities of the media and third-sector organisations (non-government organisations) (Stawasz, 2011). Arguably, the very organisation of the work of offices, institutions as well as the staff working in them has a considerable impact on the efficiency of management in the public sphere.

When analysing the problem of management inefficiency in organisations of the public sphere, it is necessary to refer to the phenomenon of information asymmetry in relation to the title of the article. The process of managing information involving its collection, storage, search, retrieval, processing, and transmission is improved by ICTs. Thus, the principles of building the Management Information System itself assume special importance. The basic questions in this regard are: what information is important to the organisation; how to obtain this information; how to collect and store it, update it, process it, and use it; and, possibly, under what conditions it should be transferred to users and stakeholders. Every Information Management System has five main structures. These are:

- information structure – who, why, what, how often to inform;
- spatial structure – concerns the location of source information, the location of users, and the routes of information transmission;
- technological structure – refers to methods and techniques through which information is obtained, stored, processed, updated, used, and transmitted (what are they?);
- technical structure – refers to the equipment useful for operating the system;
- organisational structure – defines the relationship of information with the hierarchical links and formal structure of the organisation (Kuczmera-Ludwiczynska et al., 2002).

Depending on how the information system is structured translates into whether or not one will have to deal with the phenomenon of information asymmetry and information gap (Flakiewicz, 1974; Romanowska, 2008). It does not translate into when every organisational unit will have free access to the information necessary for its functioning. It may be that the information system does not contain information useful to the department, organisational cells, or the acquisition of information on a given topic is duplicated and there is no inter-cellular information coordination in this regard.

Public information is also used to communicate between the organisation and its stakeholders. To perform this function satisfactorily, it must be made public. The manipulation of information and the transfer of low-quality data serves to camouflage the facts and hide mistakes, ultimately reducing the efficiency of public administration. Without making public information public, there is no way to control the effectiveness of public sector activities. In turn, without control, the authorities – managers having a sense of impartiality and impunity – may be inclined to implement with public funds particularistic goals, often not corresponding to the public interest. Then comes the phenomenon of the alienation of the authorities from the society, the lack of trust in the authorities, and the weakening of social capital.

Other factors

Among other factors contributing to asymmetry in access to public data, there is low data quality. It can result, for example, from measurement error caused by inaccurate instruments, human error during data collection or entry, non-participation in the survey, inconsistencies that make it difficult to combine some data, and the inherent complexity of some constructs.

A significant barrier to building equitable access to data is low interoperability, which, in practice, means the poor ability of ICT systems and the processes they support in order to exchange data and share information and knowledge (Ustawa o informatyzacji..., 2005). One aspect of interoperability is the standardisation of data formats, structures, and semantics. Data sources often use different formats and structures to store and represent data, making it difficult to seamlessly integrate or analyse data from multiple sources. Incompatibilities in data formats can hinder the ability to accurately aggregate or match datasets, potentially leading to asymmetries in the combined data. In addition, interoperability involves consistency and coherence in data and metadata definitions. Data sources may use different terminologies, coding schemes, or classifications of similar concepts or variables (Malomo & Sena, 2017). As a result, when attempting to combine or analyse data from different sources, discrepancies in definitions and meanings of data elements can cause inconsistencies and asymmetries.

Another factor influencing data asymmetry may be contextual, resulting from social, economic, and cultural conditions affecting the willingness of individuals or groups to disclose certain information or participate in data collection activities. Additionally, inequality in access to public data will be influenced by insufficient digital competence in government offices or insufficient employee involvement in digitisation and data management processes.

Research methodology

As indicated earlier, one of the main factors in asymmetry in access is digital gap, a concept formulated by African-American politician S. J. Jackson in reference to differences in computer and Internet use between citizens from countries of different economic status, socioeconomic status, gender, age, and place of residence. That is, the digital divide includes variables such as income level, race, gender, and ethnicity (Szpunar, 2007). However, digital gap does not just mean a lack of access to the network, but also, to a large extent, a lack of skills to use it.

As mentioned earlier, the purpose of the article was to try to identify the root causes of asymmetry in access to public data and analyse them in relation to socioeconomic conditions. The research part of the paper, preceded by a literature review, was contextualised as follows. The first step of the undertaken research is to measure access to the Internet and the types of information searched by Internet users in Poland in the period of 2018–2022. The analysed group was individuals with access to the Internet. Then, the ways in which citizens use electronic/digital government in 2022 were analysed in relation to education level, the place of residence, and income received. All data was obtained from databases and statistical studies of the Central Statistical Office.

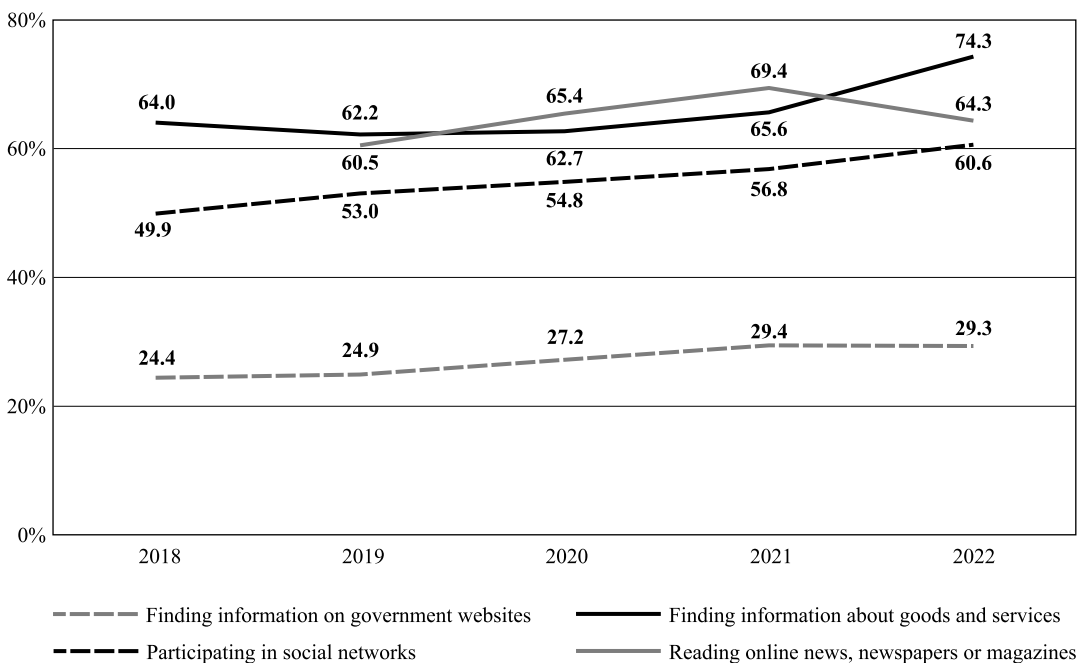
Later, the R-Pearson's correlation coefficient was analysed between the percentage of people who use the Internet regularly and the percentage of people who search for information on government websites by place of residence in the last five years and age group. The R-Pearson correlation coefficient makes it possible to determine whether there is a linear relationship between

two variables – if so, it gives the possibility to determine what the strength of the relationship is and what its nature is.

The final step was the analysis of the number of entries to the Open Data portal between 2018 and 2022.

Discussion of the results

In 2022, 93.3% of households in Poland had access to the Internet, with 90,6% using it. (*Spoleczeństwo...*, 2022). Considering the types of publicly available information searched, it can be noted that the most frequently searched information was that on goods and services (on average, almost 66% of people with Internet access searched for such information in the last 5 years), while the least frequently searched information was on public administration websites (only 27%). However, the percentage of people making searches for publicly available information did not change significantly in the studied years (Figure1).



* no data available for 2018.

Figure 1. Internet search for publicly available information in 2018–2022*

Source: Own study based on data from the publication Information Society in Poland in 2022, Central Statistical Office in Poland, Statistical Office in Szczecin, Szczecin 2022.

The level of education is one of the determinants of data equity issues. Figure 2 illustrates the goals of using public e-government by education level in 2022.

As can be seen in the Figure 2, people with higher education generally made much greater use of searching for information from government websites and its electronic services than those with primary and junior high school education. This may be due to better skills of using

information and communication tools as well as the ability to search for relevant information. Analysing income quartiles in the context of the means of purposes for using government websites also shows a relationship between income and the percentage of people obtaining information by this means. The higher the income, the higher the percentage of people in particular with regard to searching for information and accessing personal information collected by public administration (Table 1).

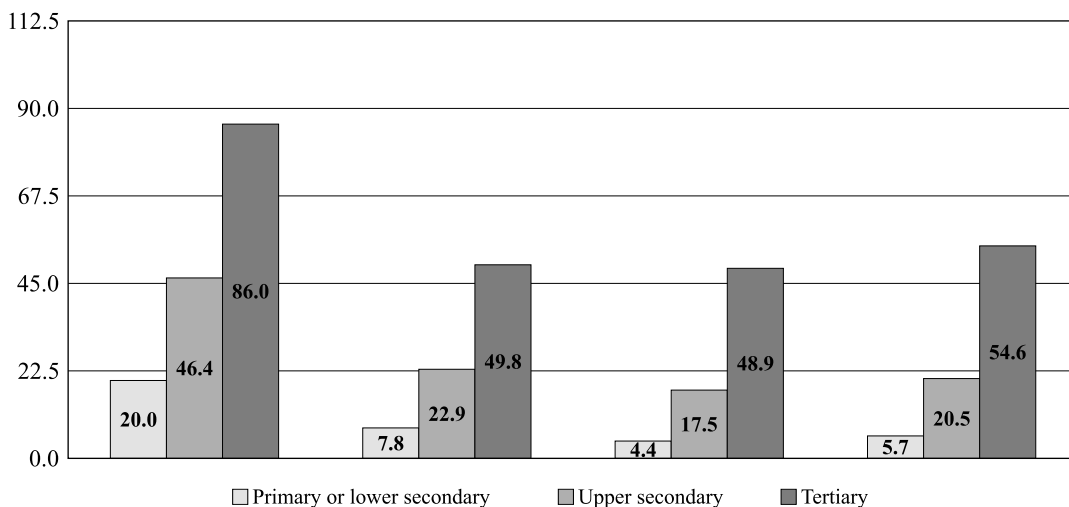


Figure 2. The use of public e-government by purpose and education in 2022

Source: Information Society in Poland in 2022, Central Statistical Office in Poland, Statistical Office in Szczecin, Szczecin 2022.

Table 1. The use of government websites by purpose and income in 2022

%	Net income – quartiles (in PLN)			
	< 3600	3600-6000	6000-8000	> 8000
People who have used websites or applications of government entities in the last 12 months:	43.3	52.9	57.6	61.6
to access personal information held by government entities	18.5	23.0	24.4	31.8
in order to use public databases or registers	4.9	6.5	7.2	11.7
to search for information on government websites	20.7	27.3	31.6	33.1

Source: Own study based on Central Statistical Office data, www.stat.gov.pl [accessed: 01.06.2023].

With regard to geographic factors, differences in searching for information on government websites among people living in urban and rural areas also become apparent (Table 2).

The most significant differences are found between residents of large cities and rural areas, which may be due to the skills they possess, but also because of the provision of adequate infrastructure. An analysis of the correlation coefficient between the percentage of people using the Internet regularly and the percentage of people searching for information on government websites by place of residence in the last five years provides interesting insights. The highest

correlation coefficient is for medium-sized cities with less than 100,000 inhabitants ($\text{corr} = 0.97$). This may mean that people living in medium-sized cities have similar skills in using information and communication tools as those in cities with more than 100,000 inhabitants ($\text{corr} = 0.90$), but due to the lack of direct access to some public institutions, they use the Internet route. The same factor may apply to regular Internet users from rural areas, in which case the correlation coefficient was 0.95.

Table 2. The use of government websites by purpose and place of residence in 2022

%	Total	Cities up to 100,000 inhabitants	Cities with more than 100,000 inhabitants	Villages
People who have used websites or applications of government entities in the last 12 months:	55.4	55.1	65.9	48.1
to access personal information held by government entities	25.4	23.7	37.2	18.4
in order to use public databases or registers	8.1	7.5	13.8	4.5
to search for information on government websites	29.3	28.8	37.0	24.1

Source: Own study based on Central Statistical Office data, www.stat.gov.pl [accessed: 01.06.2023].

In the breakdown of regular Internet users by age group, the highest positive correlation with the percentage of people searching for information on the websites of public institutions occurs among seniors aged 65+ ($\text{corr} = 0.99$) and 55–64 ($\text{corr} = 0.98$). Seniors, moreover, are the group with the largest change in regular Internet use, from 29.8% in 2018 to 51% in 2022 (see Figure 3). Undoubtedly, the COVID-19 pandemic and the lockdown introduced from March 2020 had a key impact on this change. The negative moderate correlation ($\text{corr} = -0.44$) is for those under the age of 25.

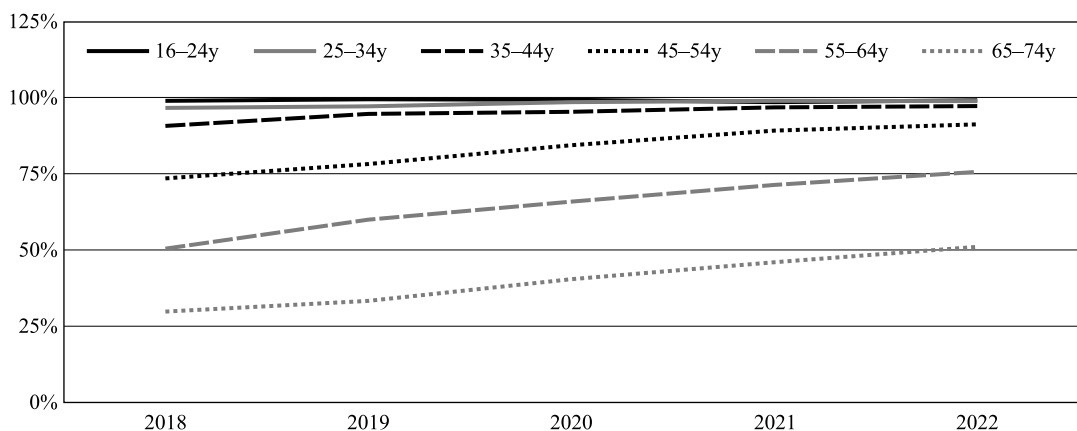


Figure 3. Percentage of regular Internet users in 2018–2022 in Poland by age groups

Source: Own study based on data from the publication Information Society in Poland in 2022, Central Statistical Office in Poland, Statistical Office in Szczecin, Szczecin 2022.

In addition to the factors identified above for the asymmetry of access to public information, lying in the social area, there are also institutional or organisational factors in Poland, such as the types and methods of data made available. For example, the national Open Data portal provides access to 1,916 datasets, although most of them are made available through it not by local government institutions, but by other public sector entities. Of all the providers, 80 belong to local governments, while the vast minority of them are municipal offices. Most of the public institutions provide access through their own websites. The number of hits on the portal's website grew until 2021, with a rather large drop in website views in 2022 (see Figure 4).

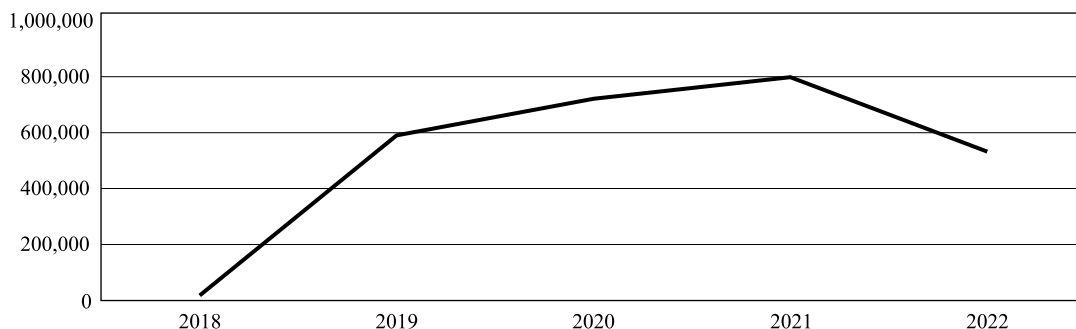


Figure 4. The number of views of the Open Data portal between 2018 and 2022

Source: Own compilation based on statistics from <https://widok.gov.pl> [accessed: 15.06.2023].

Moreover, the asymmetry is reinforced by barriers to data sharing and exchange between public and private institutions in Poland, as described in a report commissioned by the Chancellery of the Prime Minister on the challenges and prospects of information sharing (*Wyzwania i perspektywy...*, 2021). These include:

- the lack of adequate regulations on data openness;
- restrictions arising from licensing agreements;
- charging fees for making data available for commercial purposes;
- the availability of data in closed or proprietary formats;
- the lack of data interoperability.

Conclusions

Asymmetry of access to public data is a complex issue. As a result of the analysis of selected factors affecting unequal access to information in Poland in 2018–2022, several important conclusions can be made. First, the research confirms the existence of a digital gap in Poland, and some of its factors are income level, education, the place of residence, and age. The gap is not only about access to the network, but also about the ability to use it. Second, familiarity with digital tools and the ability to search for information online are strongly related to the education level. People with higher education are much more likely to use online public administration services than those with primary or secondary education. Thirdly, analysing the availability of public data in the context of income, it can be noted that the higher the income, the higher the percentage of people using online public administration. The analysis also shows that older citizens, despite

being the group that uses the internet the least, record the largest increase in regular Internet use, i.e. from 29.8% in 2018 to 51% in 2022. Adolescents and young adults, despite being the most active group online, hardly use government services online. Meanwhile, the availability and quality of data provided by public institutions poses a significant challenge. Although the number of datasets provided on the national Open Data portal is significant, their distribution is uneven, and many public institutions choose to provide data on their own websites, which can make it difficult to access and view this information.

We are aware, of course, of the fact that the analysis conducted is a small slice of research on asymmetry of access to data. Citizens are one of several stakeholder groups affected by unequal access to information. More in-depth research is needed in the area of business entities and their ability to access and use public data, as well as in the field of public institutions in terms of their ability to share data depending on the type of institution, geographic location, and a number of other potentially relevant factors.

The research suggests the need for measures to increase access to public data, especially among people with lower incomes, from smaller towns, with lower levels of education, and in age groups that are less digitally-proficient. These measures could include digital education, investment in Internet infrastructure, and increasing the quality and availability of public data. From the institutional perspective, the study's findings suggest the need for further digitisation and standardisation of data-sharing processes by public institutions. It may be expedient to promote a uniform data format and centralise data distribution to facilitate access to information and increase the transparency of public administration.

It should be emphasised that asymmetry in access to data can be mitigated by appropriate government policies through the implementation of transparent and fair data dissemination practices. Central to this endeavour is the establishment of open data portals, which should be designed to be user-friendly and accessible to individuals from diverse backgrounds, thereby reducing technical barriers. Furthermore, the adoption of standard data formats and the provision of comprehensive metadata can enhance the usability of these datasets. Policymakers should also consider regular public consultations to identify and address specific community needs, ensuring that data accessibility initiatives are inclusive and responsive. Additionally, fostering partnerships with educational institutions and non-profit organisations can facilitate the development of training programmes, aimed at equipping citizens with the necessary skills to effectively utilise public data. Through these measures, policymakers can significantly contribute to democratising access to public data, promoting transparency, and fostering more informed citizens.

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Conflicts of Interest

The authors declare no conflict of interest.

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Data Availability Statement

All data will be available and shared upon request.