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IMPACT OF THE INCREASE IN SOCIAL BENEFITS ON PAID EMPLOYMENT OF MOTHERS OF CHILDREN WITH DISABILITIES: EVIDENCE FROM POLAND

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ABSTRACT. This study examines the impact of the increase in social benefits on the workforce participation of mothers rearing children with disabilities. Since 2010, social policy in Poland has changed, leading to more generous payments from the state to families with children. Based on a large national probability sample from the Household Budget Survey of 2010, 2019, and 2021, the employment rates are examined using population estimates, a measure of information value, and logistic regression. The results reveal that mothers of children with disabilities are much less likely to take up employment than mothers of typically developing children. Over time, this difference has widened. A mother's education is the most informative predictor of her employment status. Moreover, its predictive power increases, as the less educated tend to quit their jobs and those with tertiary education work more often.

Keywords: employment rate in Poland, Household Budget Survey, information value, logistic regression, mothers of children with disabilities, paid work.

Introduction

Paid work determines a person's major life activity and social position. It is also a source of livelihood (Giddens, 2008; Gitling, 2013). For women, paid employment is an important source of financial independence and change in their social roles, especially in the family setting (Kuchařová, 1999). Other important aspects of paid work for women include self-fulfilment and development, contact with other people, and establishment of their own identity (Scholz et al., 2014; Szyszka, 2016; EIGE, 2017). Gender diversity, especially in senior positions, results in greater profits for companies. Women joining the workforce also positively affects economic growth (Appelbaum et al., 2014; Ellemers, 2014; Mitra et al., 2015; Christiansen et al., 2016).

Accordingly, one of the fundamental labour market objectives of the European Union (EU) concerns gender equality, increasing women's participation in the labour market, and increasing the female employment rate (Mitra et al., 2015; EIGE, 2017).

The employment rate of women aged 25–54 in the EU countries increased from 70.4 percent in 2010 to 75.0 percent in 2021 (74.7 in 2019). In Poland, during the same period, this indicator increased from 69.9 to 79.9 percent (76.3 in 2019) (Eurostat, 2023).

Women are the main source of care within the family (Klaus & Vogel, 2019; Witkowska & Kompa, 2020); thus, the intensity of the care burden of the other family member is an important factor in the context of their economic activity (Pollmann-Schult, 2015; Perry-Jenkins & Gerstel, 2020). For mothers of children with disabilities, reconciling childcare and economic activity is more difficult than it is for mothers of typically developing children due to additional responsibilities related to the rehabilitation, care, and treatment of the child. Having a child with a disability is an indirect reason why many mothers limit their economic activity or leave the labour market (Morris, 2014; Gomez Mandic et al., 2016; Komorowska, 2017; Chou et al., 2018; Working Families and Unum, 2018; Banaszekiewicz et al., 2019; Ejiri & Matsuzawa, 2019; Komorowska & Kozłowski, 2023).

An important aspect of undertaking economic activity by mothers, including mothers caring for a child with disabilities, is the social policy of the state (Kay, 2000; Windebank, 2012). Adequate legal regulations on paternity leave, flexible working hours, and the availability of care facilities have a positive impact on the participation of women raising children (Hegewisch & Gornick, 2011; Castro-García & Pazos-Moran, 2016). However, as Misra et al. (2011) point out, state support for mothers should be appropriately balanced, as too long parental leave may discourage employers from employing workers raising children and too high benefits may shift the desire to return to the labour market.

This article examines the impact of the increase in social benefits on the paid employment of mothers of children with disabilities. The analysis is enriched by comparison with the paid employment of mothers of typically developing children. To accurately determine the effects of the increase in social benefits on the paid employment of mothers in both groups, the study controls factors that may differentiate employment rates, such as the mother's education, place of residence, age of the mother, and age of the youngest child. The analysis is based on data obtained from a large national probability sample; thus, the results can be generalized to the whole population. The article fills the research gap because it approaches the subject of the employment of mothers in many aspects. In addition, it describes the economic activity of a group of mothers that, to the authors' knowledge, has not been analysed by other authors based on a large probability sample. A comparative analysis of three years makes it possible to observe a correlation between state policy regarding social benefits and economic activity.

The analysis covers three years, between which there was a significant increase in social benefits for families with children. The year 2010, when the income criterion for receiving a nursing benefit for a carer of a child with disabilities was abolished, began a period of changes in family benefits. Over the following years, social benefits increased much faster than the average wage in the national economy. The year 2019 is the last year before the COVID-19 pandemic. Therefore, it is the last year in which external conditions are most comparable to 2010. The year 2021 is in the middle of COVID-19 pandemic, which significantly changed socio-economic conditions, including those of families with children. Thus, this year serves as an important checkpoint of robustness of effects occurred in the previous decade.

1. Changes in social policy in Poland

In Poland, a carer of a child with a disability can count on two types of social benefits directly related to a child with a disability. The basic benefit is the so-called *nursing benefit*. The condition for receiving it (up to the year 2024) was a complete resignation from paid employment for the sake of childcare. Since 2010, this benefit has been granted regardless of household income. In the following years, the amount of this benefit gradually increased. In 2010, the child's carer received PLN 520 per month, and by 2019 this amount more than tripled, to PLN 1583.¹ At the same time, the amount of the minimum net wage increased only twice, from PLN 918 in 2010 to PLN 1766 in 2019. In 2021, the benefit was PLN 1971, and the minimum wage (net) was PLN 2198.

The second benefit is the *attendance allowance*, which is granted for a child with a disability, regardless of other conditions relating to carers or household. The purpose of this benefit is to partially cover the expenses associated with the care of a child with a disability, but its amount is small, considering the purpose of its payment and the expenses incurred by carers for a child with a disability. From 2006 to 2018, this benefit amounted to PLN 153. On 1 November 2018, the benefit was raised to PLN 184, and from 1 November 2019, the benefit amounts to PLN 215.84. Verification of its amount is to take place in 2024.

In 2016, the benefit for bringing up a child was introduced as part of the *Family 500+* program. The program is addressed to all families with children. As the name of the program implies, the family receives PLN 500 per child. Initially, this benefit was granted for the second and subsequent child, while, in the case of the first child, the granting of the benefit depended on the amount of income in the household (the income threshold was higher in the case of families with children with disabilities). In 2019, however, the income threshold for the first child was abolished – the benefit was granted to the first child, regardless of family income. This benefit is not indexed, and the first increase of it, to the amount of 800 PLN, was introduced in 2024.

To sum up, between 2010 and 2021, there was a significant increase in the amount of social benefits that a carer of a child with disabilities could count on. The amount of benefits in 2019 in the case of a household with a child with a disability gave a total income of PLN 2,083 net (with one child in the family, a child-raising benefit of PLN 500 per child plus a nursing benefit of PLN 1583), which constituted a fairly significant base of stable income, especially important in the case of a caregiver with lower professional qualifications. This amount was higher than the minimum net wage by PLN 317, and the caregiver could also add an attendance allowance of PLN 215.84 to this amount.

2. Combining childcare with paid work

Caring for another family member is difficult to reconcile with full-time work. A woman working full-time with low-intensity family care will seek to reduce working hours, while, in a situation where she is married and the care burden is significant, she will give up work altogether (Ehrlich, 2023; Szüle, 2023).

Popular culture and media play a significant role in promoting the image of a mother devoting her time, energy, career, and individuality to raising children (Heffernan & Wilgus, 2018). The so-called “myth of motherhood” generates guilt in mothers because they experience difficulties in performing maternal functions on a daily basis, which is incompatible with the image of an ideal mother. Women raising children have a sense of split between the desire to

¹ In 2017, the principle of annual indexation of this benefit by a percentage increase in the minimum wage was introduced.

devote time for themselves and the responsibility for the child. This is confirmed by studies from the early twenty-first century (Choi et al., 2005) and conducted 15 years later (Constantinou et al., 2021). Motherhood is not only associated with a feeling of satisfaction, joy, and a sense of fulfilment on the part of women. A study conducted in Canada among 297 mothers of children aged 4–9 years found that it was also associated with anxiety and frustration (Johnston & Mash, 1989). Face-to-face interviews conducted in the United States among 30 deeply religious mothers indicated that it also involved loss in motherhood (Laney et al., 2015). Women's perceptions of motherhood may vary depending on the culture of the country in which they grew up (Shloim et al., 2020). The influence of these patterns is so great that they translate even into the second generation of immigrants, as shown by a study conducted among mothers in Norway with parents of immigrants from Pakistan (Nadim, 2014).

In a situation where the mother takes up economic activity, she often experiences a conflict between work and family, which is associated, on the one hand, with guilt and, on the other hand, with additional duties during the day. Mothers cope with combining both social roles in different ways, including organizing consecutive days in advance, building a network of family and friends, using the support of the organization, hiring domestic help, taking up part-time work, and working in a flexible hourly system. Combining these two roles also means compromising and setting boundaries both at work and home (Young, 2019). A German study based on the German Socio-Economic Panel from 1984 to 2015 and restricted to women aged 16–45 (N = 18,238) shows that the relationship between motherhood and life satisfaction has changed over the years. The authors of this analysis suggest that, as the expectation of mothers to quit their jobs and stay at home with their children waned in Germany, motherhood increasingly affected life satisfaction. However, they note that working and receiving high wages is more conducive to women's life satisfaction than having a child (Preisner et al., 2018). A Eurobarometer survey (on caring for ailing parents) shows that women's labour force participation is negatively influenced by society's approach to care rules in a given country and care policies (Naldini et al., 2016).

Many different factors affect the economic activity of women who have children. They are directly related to the mother herself, as well as to external factors, which include, among other things, fear of social rejection, remorse associated with going to work when the child is in a care institution, comparison of the costs of childcare with the earnings possible to be obtained by the woman, loss of qualifications during the period of inactivity, difficulty in combining domestic and work-related responsibilities, number of children, support from other family members, availability of care institutions, legal provisions enabling the father to take care of the child, flexible working hours, and remote work (Misra et al., 2011; Matyjas, 2016; Pufal-Struzik, 2017; Mikołajczyk & Stankowska, 2021).

A factor limiting the economic activity of mothers is also the fact of caring for a child with disabilities (Wondemu et al., 2022). According to research conducted in the United States, parents who receive more support from their superiors (the stronger the effect of this support, the less fit the child is), who occupy higher positions in the workplace, and who raise children alone are more involved in work (Stefanidis et al., 2022). A review of 54 studies described in English allowed us to distinguish several aspects related to the child's disability, which have an impact on the economic activity of their mothers: the child's age, the type and degree of disability of the child, the number of children in the family, the availability of childcare for the child, relationship status, perception of one's role in the workplace, and culture and organizational policy in the workplace (Brown & Clark, 2017). Factors such as flexibility at work, the possibility of taking paid leave, and income stability (e.g. through the payment of care benefits) are important in taking up paid employment (Earle & Heymann, 2012). The limited availability of services as a reason for mothers not taking up paid employment has been

confirmed by research from Australia. Limited services include the unavailability of suitably qualified caregivers and a lack of available preschool and after-school care (Bourke-Taylor et al., 2011). Caring for an adult child seems less burdensome and demanding compared to childhood. A study conducted in Taiwan among working mothers of adult children with intellectual disabilities showed that, to combine the role of caring with paid work, mothers built a social network around themselves and good relationships with husbands, in-laws, co-workers, and service workers. Informal support among this group of mothers was necessary for them to work (Chou et al., 2013). This may be because, in Taiwan, the law does not support flexible forms of work, which is one of the reasons why caregivers do not take up paid employment (Chou et al., 2018).

It should be emphasized that, when a child is diagnosed with a disability, new responsibilities and challenges arise in the family related to the care, rehabilitation, and support of that child. A diagnosis of disability may be associated with feelings of a lower quality of life. It can cause stress, fatigue, and anxiety (Peer & Hillman, 2014; Eifert et al., 2015; McConnell & Savage, 2015; Gugliandolo et al., 2022). The intensity of stress, time, and physical and organizational loads is undoubtedly influenced by the type of dysfunction in the child. The stress of parents of children with disabilities results from many factors. One of them is the child's therapy itself due to the feeling of pressure and responsibility that rests on the parent and the feeling that the parent, most often the mother, becomes the manager of their child's disability (Beckers et al., 2021). Mothers of children with intellectual disabilities have higher levels of anxiety and risk of depression than mothers of typically developing children (Raj Gogoi et al., 2016; Sapkota et al., 2017). A study conducted among 300 Bedouin-Arab families with a child with intellectual disabilities shows that, in these families, there is less marital satisfaction, a greater burden on the caregiver, and greater problems in the functioning of the whole family than in the control sample of 100 families (Al-Krenawi et al., 2011). An interesting study conducted on a sample of 157 mothers of children with autism in Hong Kong shows that a higher level of sense of coherence (SOC) translates into a lower level of parental stress. High SOC is associated with greater confidence in the parental role and greater acceptance of the child's behaviours and feelings, thanks to which the mother employs effective coping strategies for stressful life events (Mak et al., 2007).

3. Data and methods

The source of data for the study was the Household Budget Survey (HBS). The HBS is a nationwide survey carried out by Statistics Poland (GUS, 2011; GUS, 2020; GUS, 2022). This survey is the basic source of information on the standard of living of the population (including the level and structure of expenditure, the level of consumption of various articles, and the level and sources of income). It is also a valuable source of information about the structure of the household and the characteristics of all its members, including economic activity.

The survey is carried out using probability sampling, which makes it possible to generalize the results to the entire population of the country. The sample size for the whole of 2010 was 37,412 households (107,967 people), for the whole of 2019 it was 35,923 households (93,674 people), and for the whole of 2021 it was 30,867 households (78,726 people). In the sampled dwellings, all persons are examined, and family connections between household members are also recorded, which allows many social analyses to be performed on the survey data.

From the entire survey sample, a subset of units was selected for further analysis according to the following criteria. First, women with at least one child aged 18 or younger living in the same household were selected. Second, only those mothers who were in paid

employment or who could potentially be in paid employment were considered. The group of employed mothers included women who described themselves as *working* and *working, but temporarily absent from work*. The group of mothers who were not employed included women who described themselves as *unemployed, running a household, or other*. The analysis excluded persons describing themselves as a *pensioner, pupil or student, or unable to work*.

The following covariates were used:

- Education attainment level of the mother (*lower secondary or below, basic vocational, upper secondary, tertiary*)
- Age of the youngest child (in 3-year intervals)
- Age of the mother in years ([18, 25), [25, 30), [30, 35), [35, 40), [40, 45), [45, 50), [50+))
- Class of locality (*rural, less than 20 thousand, 20–99 thousand, 100–199 thousand, 200–499 thousand, 500 thousand and more*)
- Number of children (1, 2, 3+)
- Number of adults in the household (1, 2, 3, 4+)
- Disposable equivalent income from other members of the household (quintile groups)
- Spouse (partner) in the household (*yes, no*)

Descriptive statistics, information value, and logistic regression were used in quantitative analysis. Information value (IV; also, information statistics, divergence) derives from information theory and is used to measure the predictive power of the variable (Siddiqi, 2006, p. 81). If the target variable is a dummy variable indicating whether the mother is in paid employment (1 – yes, 0 – no), then the IV of a variable may be calculated as follows:

$$IV = \sum_{i=1}^k \left(\frac{E_i}{E} - \frac{U_i}{U} \right) \cdot \ln \left(\frac{E_i U}{U_i E} \right)$$

where: E_i, U_i – number of employed (non-employed) mothers with attribute i

E, U – total number of employed (non-employed) mothers

k – number of attributes of a variable.

IV measures how well variants of a given variable separate employed from non-employed. In other words, it shows how much the group of mothers in paid employment differs from that of non-employed mothers in the probabilities of observing variants of a given variable. The higher the IV, the more “informative” the variable is. If we wanted to predict whether the mother would be employed, we would have the best chance of accurate prediction if we knew the value of the variable with the largest IV. Comparing IV between years, if an increase was observed, it means that the changes that occurred during this time affected groups of people divided according to variants of a given variable differently, i.e. differences in economic activity between these groups increased.

Logistic regression is a type of generalized linear model (Fahrmeir et al., 2013). This is a commonly used method for studying the relationship between a dummy variable and covariates. In logistic regression, the probability of the dependent variable taking the value 1 is modelled, which can be written as follows:

$$P(Y = 1|X) = \frac{1}{1 + e^{-X\beta}}$$

where: Y – dependent variable

X – vector of independent variables

β – vector of parameters

The interpretation of the estimated parameters of the model is most often carried out using the so-called odds ratios, i.e. the ratios of the odds for $Y = 1$ at certain values of variables X to the odds for $Y = 1$ with other values of variables X . If only the value of the variable X_j changes

($X_j + d$) and there is no interaction in the model, then such odds ratio is equal to $e^{\beta_j d}$ and does not depend on the base values of the other X variables, thus showing the constant relative effect of changing the variable X_j on the chance of an event occurring. Another useful way to demonstrate the effect of explanatory variable variants on the explained variable is to transform the logarithm of odds (i.e. the linear combination of variables, $\mathbf{X}\boldsymbol{\beta}$) into a point system, as is often used in credit scoring (Thomas et al., 2002). This procedure consists of finding a variable whose two different variants generate the greatest difference between the logarithm of the odds and assigning these variants the most extreme range of points, e.g. 0 and 100. The remaining differences between the variants of other variables are scaled to the first range, and the total score is additionally adjusted for the influence of the intercept. In this way, each variant of the explanatory variable is assigned a certain number of points on the same scale, which makes it easier to compare their effects on the dependent variable.

4. Results

Figure 1 presents the estimated percentages of mothers in paid employment, separately in groups of mothers of typically developing children and mothers of children with disabilities, by the variants of independent variables, in 2010, 2019, and 2021. Detailed figures (frequency tables and estimated percentages) are presented in Tables 1 and 2 in the appendices.

Between the years studied, the percentage of employed mothers among mothers of typically developing children increased from 70.6 in 2010 to 72.9 in 2019, and to 75.8 in 2021. Among mothers of children with disabilities, the percentage of employed mothers was much smaller, and, over the years analysed, the differences with mothers of typically developing children had increased even more (from 26.8 percentage points in 2010 to 34.7 in 2019, and to 36.6 in 2021). Since the years 2010 and 2019 are most comparable for studying the effects of changes in social policy on the paid work of mothers, the following analysis is concentrated on these two years.

Mother's education correlated with economic activity in the same way in both groups of mothers; namely, as the education attainment level increases, the percentage of mothers in paid employment increases. However, the changes in the percentage of mothers in paid employment among mothers with a given level of education between the surveyed years were interesting. In both groups, among mothers with education lower than *tertiary*, the percentage of employed decreased, and, for people with *tertiary* education, it increased to a relatively small extent. In the group of mothers of typically developing children, the largest decreases were observed among people with the lowest education (*lower secondary or below*). In the group of mothers of children with disabilities, the largest decreases were observed among people with *basic vocational* education (from 39.2 to 20.5 percent) and *upper secondary* education (from 49.3 to 34.4 percent). It can be concluded that the changes that took place in social policy between the surveyed years contributed to a decrease in the economic activity of mothers who did not have higher education. However, for mothers of children with disabilities, this reduction was more significant. It is also worth noting that despite the declines in the percentage of employed mothers in each group by the education attainment level, except for the *tertiary* level, where the increase was very small, the overall percentage of mothers of typically developing children in employment increased. This is because the share of the most economically active mothers, i.e. those with *tertiary* education, has increased significantly in the population and the share of mothers with any other level of education has decreased.

The most economically active were mothers aged 35 and over. Employment rates for mothers raising typically developing children in the age group 35 years and more in 2019 ranged from 75.2 to 82.9 percent. Over the years analysed, the employment rate increased the

most in the age group [45, 50), from 78.4 to 82.9 percent. In the case of mothers of children with disabilities in almost every age group, the employment rate decreased markedly, except for the group of mothers aged [40, 45), for whom the employment rate increased significantly (from 40.2 to 52.1 percent).

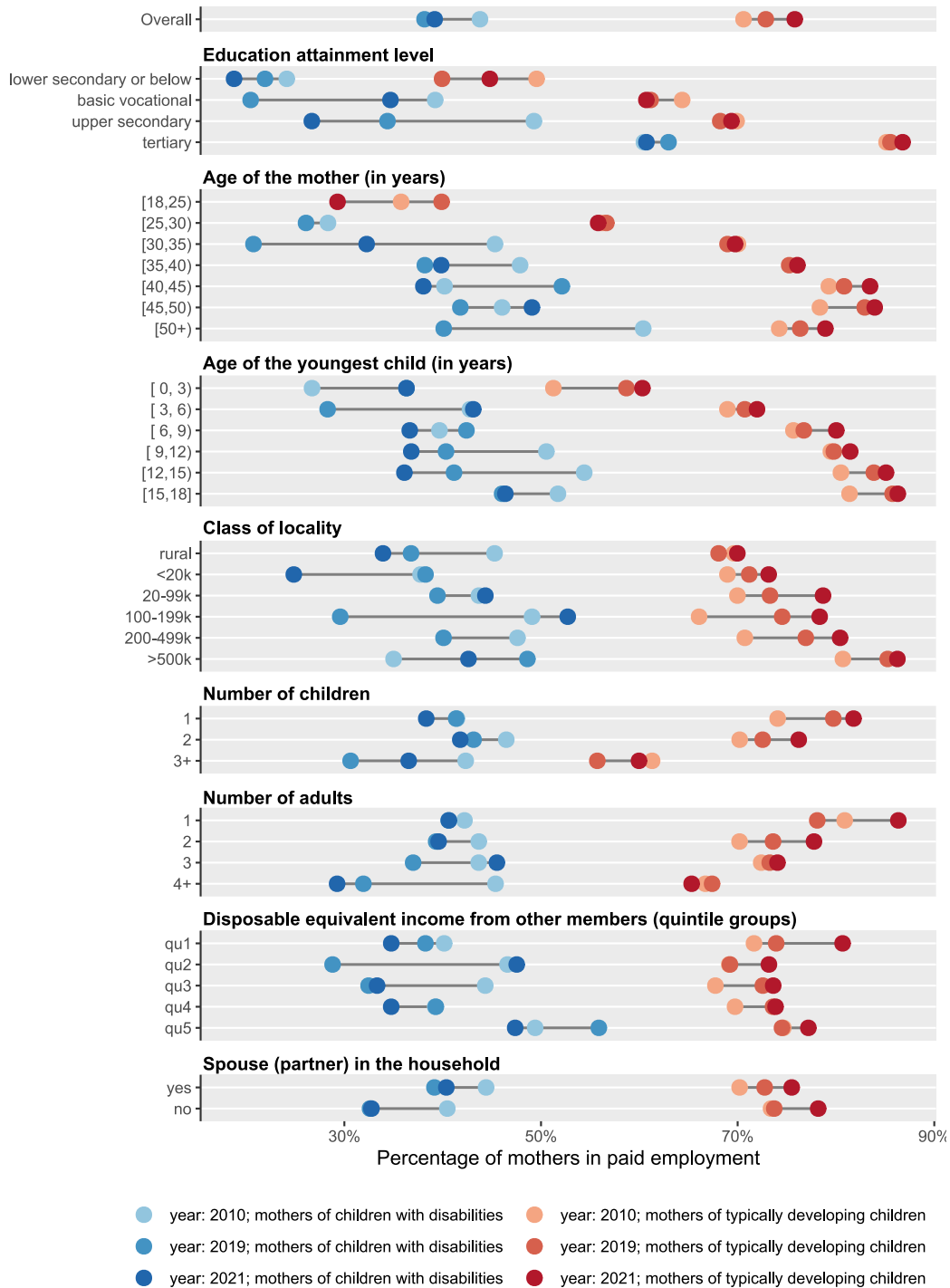


Figure 1. Estimated percentages of working mothers, by the socio-demographic characteristics of the mother and household in 2010, 2019, and 2021 (estimates based on a sample of fewer than 30 observations are not shown)

Source: own calculation

The influence of the mother's age is naturally linked to the *age of the youngest child*. The older the child, the higher the employment rate of the mothers. In the case of mothers of typically developing children, for each age group the employment rate increased. The greatest increase was observed for mothers of the youngest children, aged [0, 3), from 51.3 to 58.7 percent. In the case of mothers of children with disabilities, the changes were not so one-sided, although decreases in the employment rate prevailed.

As far as the distribution of the employment rate by *class of locality* is concerned, in the case of mothers of typically developing children in 2019, a strictly monotonic relationship could be observed: the larger the place, the higher the employment rate. Nine years earlier, the dependence was not monotonic, but the highest employment rate was also observed for the largest cities (500 thousand and more inhabitants; 80.7 percent in 2010 and 85.3 percent in 2019). Reducing the classification of localities to two variants (*rural* and *urban*), the employment rate in rural areas decreased slightly (from 69.6 to 68.1 percent), and, in urban areas, it increased significantly (from 71.2 to 75.9 percent). In the case of mothers of children with disabilities, no clear relationships with the *class of localities* were observed. After reducing the classification of localities to two variants, a clear decrease in the employment rate in both classes of localities can be observed, with a greater decrease in rural areas (from 45.3 to 36.8 percent) than in urban areas (from 42.7 to 39.2 percent).

In the case of the *number of children* up to the age of 18 living with their mother in the same household, there was a clear negative relationship for the group of mothers of typically developing children: the higher the *number of children*, the lower the employment rate. In addition, comparing the years studied, the employment rate for mothers with three or more children decreased significantly (from 61.3 to 55.7 percent), and, for mothers with one or two children, it increased. For mothers of children with disabilities, the relationship between the employment rate and the *number of children* in 2010 was not so clear, but, in 2019, the employment rate for mothers with three or more children decreased significantly (from 42.3 to 30.6 percent), making this relationship similar to that observed in the group of mothers of typically developing children.

The *number of adults* (over 18 years of age) living in a household has a similar impact on the employment rate. This relationship is particularly pronounced in 2019, when, for both mothers of typically developing children and mothers of children with disabilities, the increase in the number of people in the household was associated with a lower employment rate of the mother. Over the period considered, substantial changes were observed in the case of mothers of children with disabilities living in the largest households. The employment rate in this group decreased from 45.4 to 31.9 percent.

Another feature that might differentiate mothers' employment rate is the income earned by household members, excluding mothers. To obtain comparable outcomes between households of different sizes, equivalent income was calculated, i.e. the total income of household members (excluding the mother's income) was divided by the number of equivalent units. For this purpose, the so-called OECD-modified equivalence scale was used (Hagenaars et al., 1994). In this scale, the first person aged 14 and above is assigned a weight of 1, the next person a weight of 0.5, and every child under 14 years of age a weight of 0.3. To achieve comparability between the years examined, the equivalent income for all observations was expressed in 2015 prices, using the Harmonised Indices of Consumer Prices (HICP) provided by Eurostat. Then, on the basis of the combined sets from all studied years (the sets were combined for greater stability of results), quintile groups were determined (i.e. the data were partitioned into five subsets of nearly equal sizes; qu1 means the collection of 20 percent of mothers with the lowest income of other members of the household, qu2 means the collection of 20 percent of mothers with incomes of other members between the second and fourth decile,

etc.). For mothers of typically developing children, the income level of other household members did not have a major impact on their employment rate. In the case of mothers of children with disabilities in 2010, the dependence was also small, but, in 2019, a positive relationship could be observed: the higher the income of other household members, the higher the employment rate of mothers. The highest rate was observed for the fifth quintile group, which was the only one to increase in 2019 (from 49.4 to 55.9 percent). Only the first quintile group stood out from this positive relationship, for which the employment rate was quite high, comparable to the fourth quintile group.

The presence of the mother's partner (formal or informal) in the household was not of major importance for the economic activity of mothers of typically developing children, but it is of some importance for the economic activity of mothers of children with disability. When a partner was living in the household, the percentage of employed mothers was higher (by 5–8 percentage points) than when there was no partner.

The distributions of employment rates by variants of independent variables presented in Figure 1 allow for a detailed exploration of the studied phenomenon. A kind of complement, and at the same time a summary, of this exploration is the Information Values presented in Figure 2. The values of this measure were calculated for each independent variable and separately for collections of mothers of typically developing children and mothers of children with disabilities, and separately for the selected years. Estimates of the number of employed and non-employed people in the study population were used to calculate IV. The exact figures are given in Table 3 in the appendices.

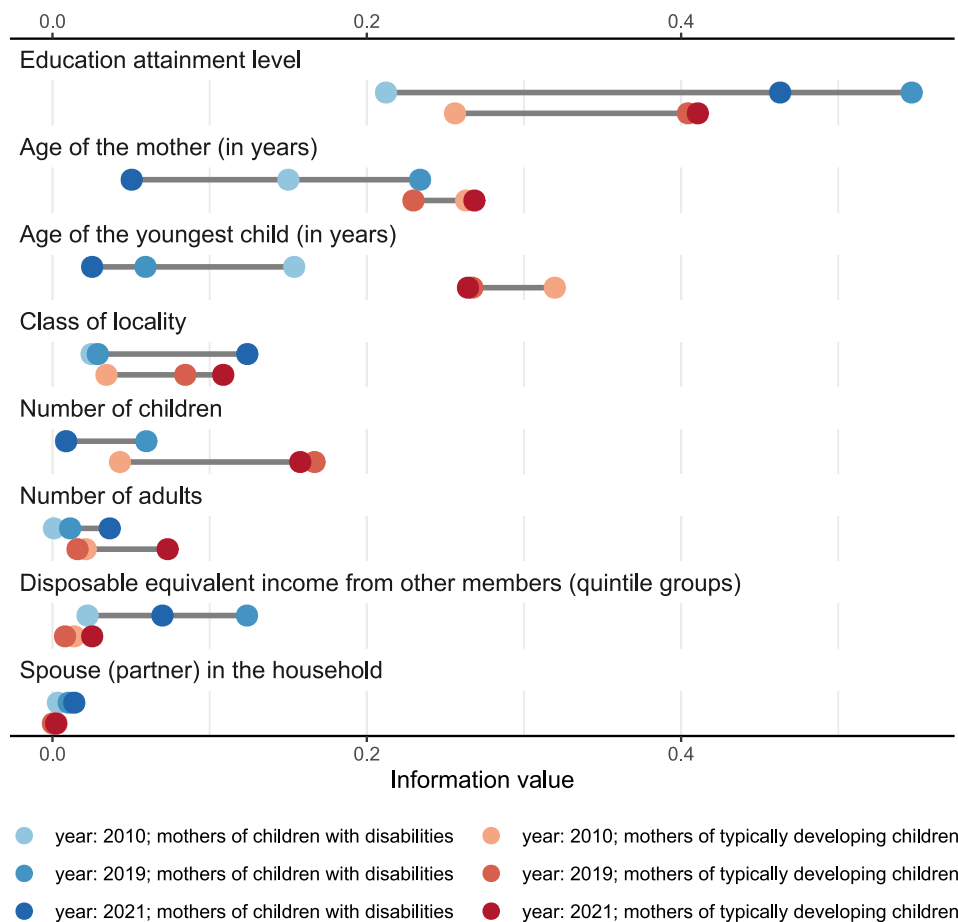


Figure 2. Information value for predictors of employment rate

Source: own calculation

Large IVs indicate that the distributions of the examined variables strongly differ between the groups of employed and non-employed mothers. In addition, a change in IV over time indicates that the influence of external factors (including social policy) was different for different groups of mothers.

In the group of mothers of typically developing children, in all studied years, the variables with the highest informative value for answering the question of whether the mother is in paid employment were *education attainment level*, *age of the mother*, and *age of the youngest child*. The biggest change between 2010 and 2019 occurred for the *education attainment level* (from 0.26 to 0.40), making it the most informative variable in 2019. Similarly, a large increase in IV took place for the *number of children* (from 0.04 to 0.17), bringing the significance of this variable closer to the first three.

In the group of mothers of children with disabilities, *education attainment level* had the highest IV. In the case of this variable, there was also the largest increase in IV between 2010 and 2019 (from 0.21 to 0.55), making the informative value of this variable a distinguished number compared to the other values presented in Figure 2. This means that the decision of a mother of a child with a disability to take up or quit paid work between the years studied depended overwhelmingly on the *education attainment level* of the mother. Other variables with relatively high IVs were, as in the group of mothers of typically developing children, *age of the mother*, *age of the youngest child*, and (which did not matter much in the case of mothers of typically developing children) *disposable equivalent income from other household members*, which gained importance in 2019.

When comparing IV changes over the years, for most of the most important variables in both groups of mothers, IV increased in 2019. The factors that influenced mothers' decisions to take up or stop paid employment between 2010 and 2019, therefore, had different effects depending on the characteristics of the mother and the attributes of her immediate environment. In 2021 that increase continued for mothers of typically developing children, but a reverse trend occurred for mothers of children with disabilities.

The exploration of employment indicators presented so far illustrates two-dimensional relationships, i.e. relationships between the target variable and one independent variable. This is a valuable analysis, but it does not show the exclusive effect of one variable on the employment of the mother because several independent variables can carry the same information. To isolate the individual impact of each independent variable, a logistic regression model was estimated, in which the dummy variable indicating whether the mother was in paid employment (1 – yes, 0 – no) was explained, and the explanatory variables were all independent variables mentioned above (all variables are qualitative or have been reduced to such by categorization; therefore, they were included in the model as a set of dummy variables, representing variants of the variable). Three models have been estimated: one for each year. For each year, a combined set of mothers of typically developing children and mothers of children with disabilities was used, while adding a variable indicating whether the child had a disability to the set of explanatory variables. In the combined datasets, the proportions of mothers in paid employment were as follows: 69.72% in 2010, 71.74% in 2019, and 75.41% in 2021. The significance of explanatory variables was tested using the Wald statistic, which has an asymptotic chi-squared distribution (Harrell, 2015, pp. 191, 194). Non-significant variables (at a significance level of 0.05) were subsequently removed from the models. These variables included 'Spouse (partner) in the household' in all three years, 'Number of children' in 2010, and 'Number of adults' in 2021. The results of these tests are presented in Table 4 in appendices.

For a clearer presentation of the model results, instead of estimated model parameters or odds ratios (which are available in Tables 5, 6, and 7 in appendices), a system of points derived from estimated parameters is presented, as described above. The range of points for

variable variants was set at 0–100. The more points the explanatory variable variant received, the more it increased the likelihood of the mother’s paid work. The point values estimated in models for 2010 and 2019 are illustrated in the form of nomograms in Figures 3 and 4, and the exact point values and standard errors of estimation are included in Table 8 in the appendices. The table with points allows one to manually calculate the sum of points for a person with known characteristics and then convert this sum into the probability of paid employment using the scale presented at the bottom of the nomograms.

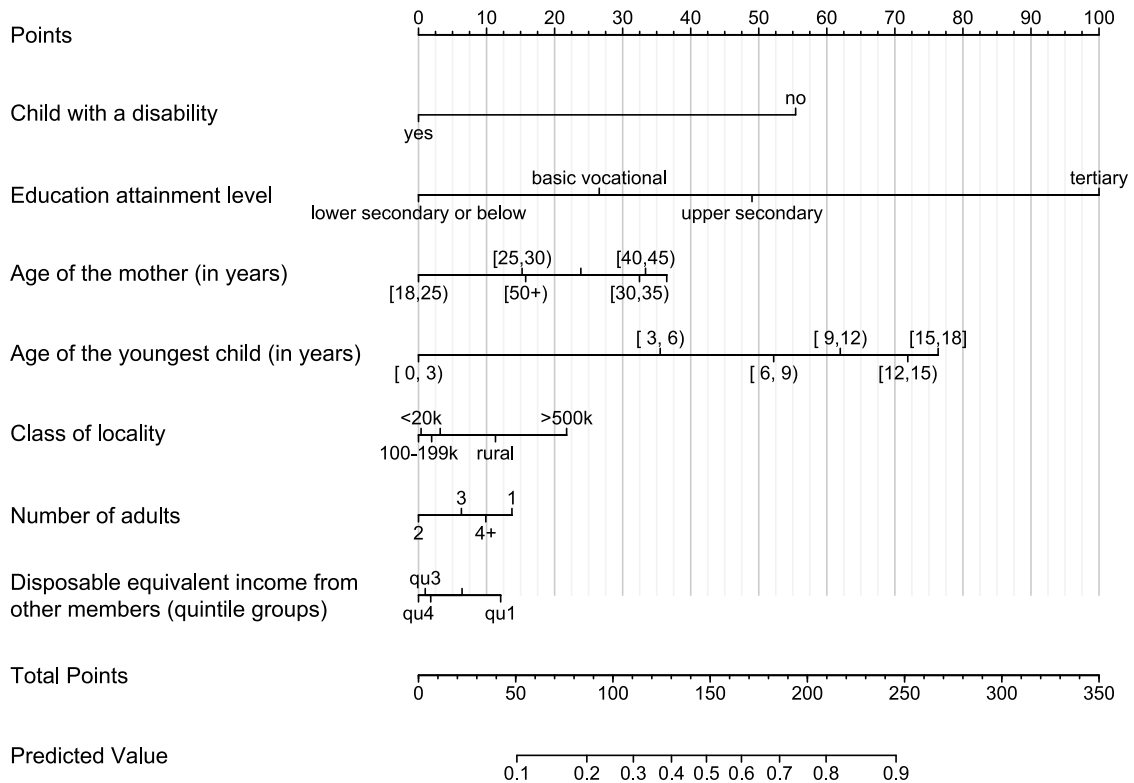


Figure 3. Nomogram of points in the model for the probability of a mother taking up paid employment in 2010

Source: own calculation

When analysing the results of logistic regression models, it can be seen that the most important variable explaining the probability of a mother’s paid employment was the level of education completed by her. Only for this variable did the point range reach its maximum span, both in 2010 and 2019. In both years, the *lower secondary or below* level received 0 points, and the *tertiary* variant, 100 points. Scoring for all variants is monotonic: each higher level of completed education was associated with a higher probability of paid employment.

The second variable that most influenced the likelihood of a mother taking up a job was the *age of the youngest child*. In both studied years, the relationship was monotonic and positive: the older the child, the greater the likelihood of the mother taking up paid work. Comparing the scoring between years, the importance of this variable decreased. Each age range of the child in 2019 resulted in fewer points than in 2010.

A child’s disability was a significant factor affecting the mother’s likelihood of taking up employment. The importance of this factor was high in 2010 and increased even more in 2019. A mother with a child with a disability received 0 points in both periods, while a mother with a typically developing child received 55.4 points in 2010 and 64.3 points in 2019. Translating the points into odds ratios, the results were as follows: 3.49 in 2010 and 4.45 in

2019. This means that, in the first year of the survey, the odds for the paid employment of mothers of typically developing children were 3.49 times higher than the odds for the paid employment of mothers of children with disabilities. Nine years later, the ratio of those odds increased to 4.45. In the pandemic year 2021 the significance of child's disability grew still, resulting in 87.3 points and odds ratio of 6.19.

Another important variable in terms of the number of points possible to earn was the *age of the mother*. Over the years studied, the importance of this variable had decreased, and the age at which the probability of employment was highest had shifted. In 2010, the variant with the highest number of points was the range [35, 40) years, for which 36.5 points could be obtained. In 2019, the variant with the highest number of points was the range [40, 45) years, for which only 31.3 points could be obtained. The only age range for which more points could be scored in 2019 than in 2010 was the [45, 50) age range.

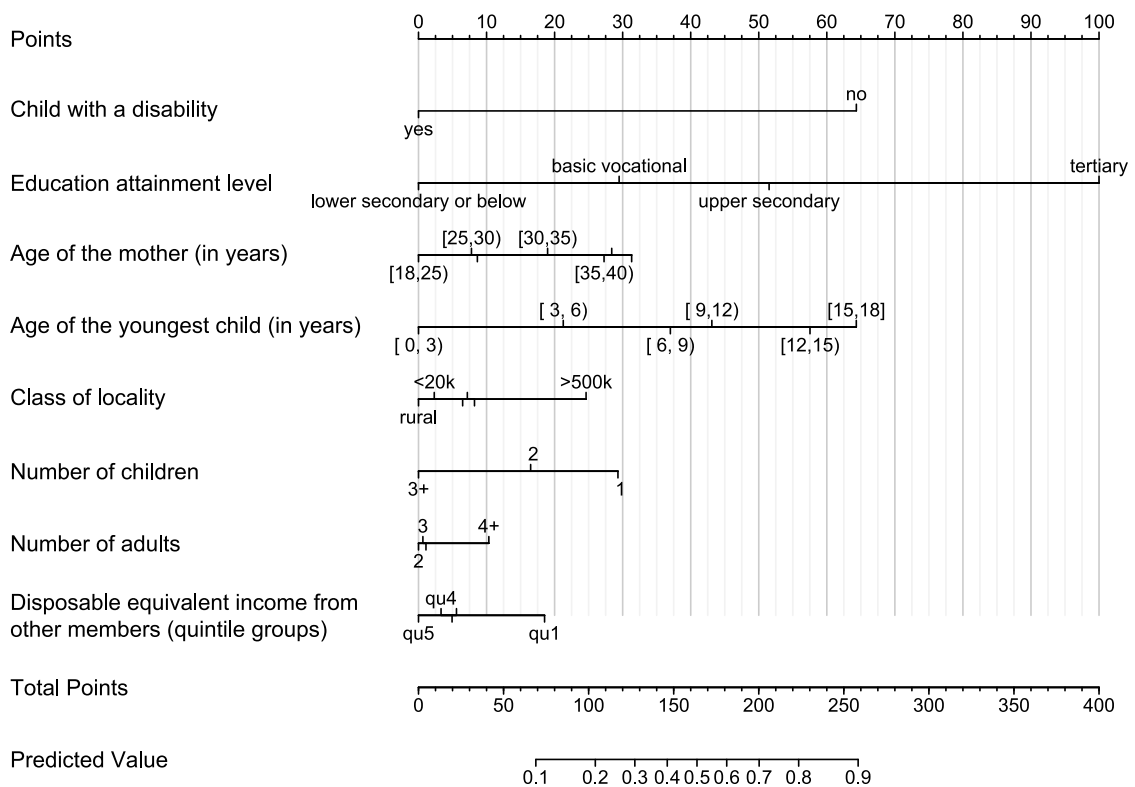


Figure 4. Nomogram of points in the model for the probability of a mother taking up paid employment in 2019

Source: own calculation

The biggest changes over time in terms of the impact on the likelihood of a mother taking up employment occurred for the variable *number of children*. In 2010, it was a variable of virtually zero importance and was removed from the model, while, in 2019, its impact was significant. In the latter year, the highest probability of a mother's paid employment was associated with having one child (29.3 points), the lower probability with having two children (16.5 points), and the lowest with having three or more children (0 points).

Class of locality maintained a similar significance between the years studied, but the nature of its impact on the likelihood of a mother's employment changed slightly. In 2010, the highest probability of a mother taking up a job was associated with living in the largest cities, with 500,000 and more inhabitants (21.8 points), and in rural areas (11.3 points). In 2019, the

probability of a mother's paid employment was the lowest in the rural area (0 points), while, in the largest cities, it was still the highest (24.6 points).

The remaining explanatory variables were of little importance for the likelihood of the mother taking up employment. These were variables that described the household composition and the amount of income received by other household members. Among these variables, *spouse (partner) in the household* was the only variable that was statistically insignificant in all years studied. Mothers whose income from other household members was in the first quintile group were the most likely to be in paid employment, but having this attribute gave only 12.1 points in 2010 and 18.5 points in 2019.

Discussion and conclusions

The article explores the impact of the amount of social benefits on the employment of mothers of children with disabilities. Thanks to the data from a nationwide probabilistic sample, the results are representative of the population of mothers in Poland. Including the socio-demographic characteristics of mothers and their surroundings makes the comparison analysis over time and between two groups of mothers more valid.

This study expands on the results of other analyses that were also conducted as sample surveys. In a study carried out by Morris (2014), which aimed to determine the impact of work on the mental health of parents of a child with disabilities, the data used in the analysis came from the National Survey of American Families (NSAF) from 1997, 1999, and 2002, which was carried out based on a random sample. Another sample survey conducted in the United States in 2006 among 4,335 adults aged 18–69 was the Work, Family and Community Nexus (WFCN) study. It was conducted to assess the impact of working conditions on the carers of elderly and disabled people and the risk of loss of earnings by this social group (Earle & Heymann, 2012). Many studies on the activity of families with children with disabilities are based on a non-random, sometimes small sample. A study to determine how mothers reconcile paid work with caring responsibilities involved 15 mothers (Chou et al., 2013). In the study, which looked at a comparative analysis of parental engagement with a child with special needs in two countries, the number of respondents from Singapore was 224 and from the United Kingdom 206 – and the survey itself was carried out through special education and inclusive educational institutions in both countries (Stefanidis et al., 2022). In Japan, the survey was conducted among 243 mothers who returned a questionnaire in connection with the examination of their health, financial situation, and employment (Ejiri & Matsuzawa, 2019). A notable exception is the study conducted by Wondemu et al. (2022), which was based on large datasets obtained from Statistics Norway (139,189 mothers and 134,457 fathers).

The results of this research indicate that, in Poland, the majority of mothers of children with disabilities are not in paid employment. Moreover, the percentage of employed mothers of children with disabilities decreases over time. The employment rate for mothers of typically developing children follows a long-standing upward trend. As a result, the difference between these groups of mothers deepens.

The authors of the Eurofound report (2016) stress the importance of increasing women's labour force participation due to the aging population in Europe and note that the employment rate of people aged 15–64 in the EU28 increased in 2015 compared to 2005, but thanks to an increase in women's participation in the labour market. In this context, it is important that the proportion of mothers bringing up children with disabilities also shows an upward trend. In the analysis of the economic activity of parents taking care of a child with a disability (Working Families and Unum, 2018) four out of ten parents who are not in paid employment have been out of work for more than five years, while more than nine out of ten would like to work.

According to the authors, difficulties in taking up economic activity result, among other things, from difficulties in accessing childcare – also resulting from its high costs.

The data from HBS do not allow the researcher to determine what percentage of economically inactive mothers would like to take up paid work. However, the requirement to give up paid employment completely to care for a child in order to obtain a nursing benefit certainly limits the economic activity of mothers, especially those with lower incomes. It is important to realize that paid employment for mothers of children with disabilities has an additional meaning, both for themselves and for the child and the family. Thanks to the paid employment of the mother, she has the opportunity to detach herself from the issue of disability and keep her life in perspective; the child becomes more independent, and the quality of life of the family improves (Komorowska & Kozłowski, 2021). Studies conducted in the United States show that maternal health-related quality of life was better in mothers who were economically active than mothers who were not (Bourke-Taylor et al., 2011). The mother's economic inactivity also has an impact on her future old-age pension, which will be low, and the mother will be a client of the support system (Borski, 2019; Gierusz & Komorowska, 2022). It is worth emphasizing that economic inactivity, especially in the case of mothers of children with intellectual disabilities, can contribute to leaving the labour market for a longer period, sometimes permanently (Gomez Mandic et al., 2016; Chou et al., 2018; Komorowska & Kozłowski, 2021).

The study shows that the most important variable differentiating the employment rate is the mother's level of education. The higher this level is, the more likely she is to be in paid employment. The effect is the same, irrespective of the presence/absence of disability in their children. In the case of education attainment levels lower than tertiary in both groups of mothers, in 2019 compared to 2010, there was a decrease in the percentage of employed mothers. It is worth emphasizing that, in the group of mothers of children with disabilities, the largest decreases were observed among women with basic vocational and upper secondary education, which suggests that the amount of total social benefits turned out to be so attractive to them compared to the earnings they received that they resigned from paid work. Undoubtedly, the rules for granting nursing benefits contributed to this, which is also suggested by the fact that, in the case of mothers of children with disabilities, the level of education became the most important differentiating variable in 2019 (in 2010, the age of the mother and the age of the youngest child were more differentiating). It is worth emphasizing that, in the case of education, there was also the largest increase in the information value, which means that the change in the mother's decision to perform or quit paid work between the surveyed years largely depended on the education attainment level. With the increase in education usually comes higher earnings, the amount of which is one of the most important factors in deciding whether to resign from economic activity. The impact of educational attainment levels on labour force participation is also confirmed by the results of other studies (Yousefya & Baratalib, 2011; OECD, 2017).

In the study, the number of children turned out to be a variable that had a significant impact on the mother's paid employment in 2019 and 2021 (in 2010, its impact was insignificant). In 2019 and 2021, the more children a mother had, the less likely she was to take up a job – the highest probability of a mother's paid employment was associated with having one child, the lower with having two children, and the smallest with having three or more children. This may indicate the effect of the parental benefit, which was not granted in 2010, but, in 2019, it was paid for each child in the family. In a situation where the mother brought up, for example, three children, in 2019, she received PLN 1500 from this benefit. Meanwhile, the net minimum wage was PLN 1766.78.

Paid work is one of the main spheres of human life. As Szarfenberg (2010) notes, through insufficient participation in important spheres of collective life, a person may experience social exclusion. In the case of a mother who brings up a child with a disability, does not work, and spends her day caring for the child (even when the child is taken care of by an institution, e.g. a school), there is a risk of social exclusion not only for her but also for her child. It should be emphasized that maintaining the paid work of parents of children with disabilities is in the interest of everyone – parents, children, employers, and even the economy (Working Families and Unum, 2018). This seems to be particularly important in a situation where we are dealing with aging societies in developed economies. That is why it is important to design support for families caring for children with disabilities in such a way that it does not limit the economic activity and thus the life activity of these mothers.

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Appendices

Table 1. Frequency table (number of units in the samples)

	Year	Mothers of children with disabilities			Mothers of typically developing children		
		2010	2019	2021	2010	2019	2021
Overall		613	542	364	13470	10763	8964
Education attainment level							
<i>lower secondary or below</i>		99	48	31	1136	500	275
<i>basic vocational</i>		216	144	75	4074	2053	1325
<i>upper secondary</i>		203	187	140	4969	3741	3094
<i>tertiary</i>		95	163	118	3291	4469	4270
Age of the mother (in years)							
[18,25)		21	7	2	722	307	134
[25,30)		55	33	8	1886	1218	634
[30,35)		137	97	55	2791	2228	1599
[35,40)		165	160	90	2984	2638	2336
[40,45)		112	145	116	2473	2321	2213
[45,50)		77	65	64	1616	1365	1369
[50+)		46	35	29	998	686	679
Age of the youngest child (in years)							
[0, 3)		106	95	44	3236	2879	1806
[3, 6)		112	107	75	2315	1952	1724
[6, 9)		105	127	73	1746	1527	1387
[9,12)		101	105	61	1759	1589	1349
[12,15)		99	58	67	1842	1278	1302
[15,18]		90	50	44	2572	1538	1396
Class of locality							
<i>rural</i>		330	279	161	6792	5238	4261
<i>less than 20 thousand</i>		73	59	40	1549	1075	933
<i>20 - 99 thousand</i>		94	87	64	2136	1702	1331
<i>100 - 199 thousand</i>		41	36	40	813	728	649
<i>200 - 499 thousand</i>		44	43	27	981	838	661
<i>500 thousand and more</i>		31	38	32	1199	1182	1129
Number of children							
1		180	157	125	6451	4899	4120
2		250	222	158	5016	4411	3738
3+		183	163	81	2003	1453	1106
Number of adults							
1		52	47	34	752	699	603
2		392	349	247	8108	7056	5977
3		88	95	50	2542	1685	1455
4+		81	51	33	2068	1323	929
Disposable equivalent income from other members (quintile groups)							
<i>qu1</i>		173	147	104	2514	2061	1954
<i>qu2</i>		149	100	74	3289	1891	1432
<i>qu3</i>		106	116	66	2506	2303	1850
<i>qu4</i>		85	98	71	2376	2372	1936
<i>qu5</i>		100	81	49	2785	2136	1792
Spouse (partner) in the household							
<i>yes</i>		516	455	298	11754	9407	7823
<i>no</i>		97	87	66	1716	1356	1141

Note: Disposable equivalent income from other members – intervals calculated as quintile groups, but for the whole set combined, so subgroups according to the child's age and disability are not equal.

Table 2. Percentage of mothers in paid employment across groups (population estimates based on HBS samples)

Grouping variable	Year	Mothers of children with disabilities			Mothers of typically developing children		
		2010	2019	2021	2010	2019	2021
Overall		43.8	38.2	39.2	70.6	72.9	75.8
Education attainment level							
<i>lower secondary or below</i>		24.1	21.9	18.8	49.6	39.9	44.8
<i>basic vocational</i>		39.2	20.5	34.7	64.4	61.1	60.7
<i>upper secondary</i>		49.3	34.4	26.7	69.9	68.2	69.4
<i>tertiary</i>		60.5	63.0	60.7	85.1	85.5	86.8
Age of the mother (in years)							
[18,25)		-	-	-	35.8	39.9	29.3
[25,30)		28.3	26.1	-	56.2	56.6	55.8
[30,35)		45.3	20.8	32.3	70.0	69.0	69.7
[35,40)		47.9	38.2	39.8	76.0	75.2	76.1
[40,45)		40.2	52.1	38.0	79.3	80.8	83.5
[45,50)		46.0	41.8	49.1	78.4	82.9	83.9
[50+)		60.4	40.1	-	74.2	76.4	78.9
Age of the youngest child (in years)							
[0, 3)		26.7	36.3	36.3	51.3	58.7	60.3
[3, 6)		42.8	28.3	43.1	69.0	70.7	72.0
[6, 9)		39.7	42.4	36.6	75.7	76.7	80.0
[9,12)		50.5	40.3	36.8	79.5	79.8	81.4
[12,15)		54.4	41.2	36.1	80.5	83.8	85.1
[15,18]		51.7	46.0	46.4	81.4	85.8	86.3
Class of locality							
<i>rural</i>		45.3	36.8	33.9	69.6	68.1	70.0
<i>less than 20 thousand</i>		37.7	38.3	24.9	69.0	71.2	73.2
<i>20 - 99 thousand</i>		43.7	39.5	44.3	70.0	73.3	78.7
<i>100 - 199 thousand</i>		49.1	29.6	52.7	66.1	74.5	78.3
<i>200 - 499 thousand</i>		47.6	40.1	-	70.7	76.9	80.4
<i>500 thousand and more</i>		35.0	48.6	42.6	80.7	85.3	86.3
Number of children							
1		41.4	41.4	38.3	74.1	79.7	81.8
2		46.5	43.1	41.8	70.2	72.5	76.2
3+		42.3	30.6	36.5	61.3	55.7	60.0
Number of adults							
1		42.2	40.6	40.6	80.9	78.1	86.3
2		43.7	39.3	39.6	70.2	73.6	77.8
3		43.7	37.0	45.5	72.4	73.3	74.0
4+		45.4	31.9	29.3	66.7	67.4	65.3
Disposable equivalent income from other members (quintile groups)							
<i>qu1</i>		40.1	38.2	34.8	71.7	73.9	80.7
<i>qu2</i>		46.6	28.8	47.5	69.1	69.2	73.2
<i>qu3</i>		44.3	32.5	33.3	67.7	72.6	73.6
<i>qu4</i>		39.2	39.3	34.8	69.7	73.6	73.9
<i>qu5</i>		49.4	55.9	47.4	74.6	74.5	77.2
Spouse (partner) in the household							
<i>yes</i>		44.4	39.2	40.4	70.2	72.7	75.5
<i>no</i>		40.5	32.6	32.8	73.4	73.7	78.2

Table 3. Information value for predictors of employment rate

Variable	Year	Mothers of children with disabilities			Mothers of typically developing children		
		2010	2019	2021	2010	2019	2021
Education attainment level		0.21	0.55	0.46	0.26	0.40	0.41
Age of the mother (in years)		0.15	0.23	0.05	0.26	0.23	0.27
Age of the youngest child (in years)		0.15	0.06	0.03	0.32	0.27	0.26
Class of locality		0.02	0.03	0.12	0.03	0.08	0.11
Number of children		0.01	0.06	0.01	0.04	0.17	0.16
Number of adults		0.00	0.01	0.04	0.02	0.02	0.07
Disposable equivalent income from other members (quintile groups)		0.02	0.12	0.07	0.01	0.01	0.03
Spouse (partner) in the household		0.00	0.01	0.01	0.00	0.00	0.00

Table 4. Wald chi-square statistics and p-values for significance tests of variables in the logistic regression models in the years 2010, 2019, and 2021

Variable	d.f.	2010		2019		2021	
		χ^2	p-value	χ^2	p-value	χ^2	p-value
Child with a disability	1	187.35	<.0001	221.28	<.0001	225.01	<.0001
Education attainment level	3	755.72	<.0001	720.64	<.0001	527.47	<.0001
Age of the mother (in years)	6	116.68	<.0001	64.53	<.0001	41.90	<.0001
Age of the youngest child (in years)	5	481.60	<.0001	239.09	<.0001	162.25	<.0001
Class of locality	5	44.63	<.0001	38.74	<.0001	25.38	0.0001
Number of children	2	3.43	0.1804	84.92	<.0001	39.51	<.0001
Number of adults	3	14.97	0.0018	10.64	0.0138	3.30	0.3482
Disposable equivalent income from other members (quintile groups)	4	18.60	0.0009	27.31	<.0001	41.31	<.0001
Spouse (partner) in the household	1	2.58	0.1084	0.00	0.9558	0.01	0.9330

Table 5. Estimated parameters and odds ratios in logistic regression (dependent variable - mother's paid employment: *yes/no*) in 2010

Variable <i>category: reference category</i>	Coefficient	Standard error	Odds ratio	95% confidence interval for odds ratio	
				Lower	Upper
Child with a disability <i>yes: no</i>	-1.249	0.091	0.287	0.240	0.343
Education attainment level					
<i>lower secondary or below: tertiary</i>	-2.253	0.088	0.105	0.088	0.125
<i>basic vocational: tertiary</i>	-1.655	0.068	0.191	0.167	0.218
<i>upper secondary: tertiary</i>	-1.149	0.063	0.317	0.280	0.359
Age of the mother (in years)					
<i>[18,25): [35,40)</i>	-0.822	0.101	0.440	0.361	0.536
<i>[25,30): [35,40)</i>	-0.479	0.072	0.619	0.538	0.714
<i>[30,35): [35,40)</i>	-0.090	0.064	0.914	0.806	1.035
<i>[40,45): [35,40)</i>	-0.070	0.070	0.932	0.813	1.069
<i>[45,50): [35,40)</i>	-0.284	0.083	0.752	0.640	0.885
<i>[50+): [35,40)</i>	-0.467	0.096	0.627	0.519	0.757
Age of the youngest child (in years)					
<i>[3, 6): [0, 3)</i>	0.800	0.062	2.226	1.973	2.511
<i>[6, 9): [0, 3)</i>	1.176	0.073	3.242	2.810	3.739
<i>[9,12): [0, 3)</i>	1.397	0.080	4.041	3.457	4.725
<i>[12,15): [0, 3)</i>	1.620	0.086	5.054	4.270	5.981
<i>[15,18]: [0, 3)</i>	1.721	0.087	5.588	4.712	6.627
Class of locality					
<i>less than 20 thousand: rural</i>	-0.246	0.066	0.782	0.687	0.889
<i>20 - 99 thousand: rural</i>	-0.183	0.059	0.833	0.741	0.936
<i>100 - 199 thousand: rural</i>	-0.255	0.085	0.775	0.655	0.916
<i>200 - 499 thousand: rural</i>	-0.211	0.082	0.809	0.689	0.951
<i>500 thousand and more: rural</i>	0.236	0.085	1.266	1.071	1.496
Number of adults					
<i>1: 2</i>	0.309	0.102	1.363	1.116	1.663
<i>3: 2</i>	0.142	0.056	1.153	1.032	1.287
<i>4+: 2</i>	0.223	0.060	1.250	1.112	1.405
Disposable equivalent income from other members (quintile groups)					
<i>qu2: qu1</i>	-0.128	0.063	0.880	0.778	0.996
<i>qu3: qu1</i>	-0.250	0.068	0.779	0.682	0.890
<i>qu4: qu1</i>	-0.272	0.070	0.762	0.664	0.874
<i>qu5: qu1</i>	-0.232	0.071	0.793	0.690	0.913

Notes: Area under the ROC curve: 0.747. Confusion matrix results (cut point = 0.5): True positive = 63.23%, True negative = 10.67%, False positive = 19.61%, False negative = 6.49%.

Table 6. Estimated parameters and odds ratios in logistic regression (dependent variable - mother's paid employment: yes/no) in 2019

Variable <i>category: reference category</i>	Coefficient	Standard error	Odds ratio	95% confidence interval for odds ratio	
				Lower	Upper
Child with a disability <i>yes: no</i>	-1.492	0.100	0.225	0.185	0.274
Education attainment level					
<i>lower secondary or below: tertiary</i>	-2.320	0.111	0.098	0.079	0.122
<i>basic vocational: tertiary</i>	-1.636	0.071	0.195	0.169	0.224
<i>upper secondary: tertiary</i>	-1.125	0.060	0.325	0.289	0.365
Age of the mother (in years)					
<i>[18,25): [35,40)</i>	-0.632	0.141	0.531	0.403	0.700
<i>[25,30): [35,40)</i>	-0.452	0.085	0.636	0.539	0.752
<i>[30,35): [35,40)</i>	-0.192	0.069	0.825	0.720	0.945
<i>[40,45): [35,40)</i>	0.094	0.075	1.099	0.948	1.273
<i>[45,50): [35,40)</i>	0.026	0.096	1.027	0.851	1.238
<i>[50+): [35,40)</i>	-0.432	0.121	0.649	0.513	0.822
Age of the youngest child (in years)					
<i>[3, 6): [0, 3)</i>	0.493	0.068	1.638	1.433	1.872
<i>[6, 9): [0, 3)</i>	0.858	0.081	2.360	2.013	2.765
<i>[9,12): [0, 3)</i>	1.000	0.088	2.718	2.289	3.228
<i>[12,15): [0, 3)</i>	1.334	0.106	3.798	3.085	4.676
<i>[15,18]: [0, 3)</i>	1.492	0.115	4.447	3.548	5.575
Class of locality					
<i>less than 20 thousand: rural</i>	0.054	0.080	1.055	0.902	1.234
<i>20 - 99 thousand: rural</i>	0.166	0.069	1.181	1.032	1.352
<i>100 - 199 thousand: rural</i>	0.191	0.100	1.210	0.995	1.472
<i>200 - 499 thousand: rural</i>	0.150	0.095	1.162	0.965	1.399
<i>500 thousand and more: rural</i>	0.571	0.095	1.770	1.470	2.132
Number of children					
<i>2: 1</i>	-0.298	0.055	0.743	0.666	0.828
<i>3+: 1</i>	-0.680	0.074	0.507	0.438	0.586
Number of adults					
<i>1: 2</i>	0.025	0.116	1.026	0.818	1.287
<i>3: 2</i>	0.015	0.068	1.015	0.888	1.160
<i>4+: 2</i>	0.240	0.074	1.271	1.099	1.470
Disposable equivalent income from other members (quintile groups)					
<i>qu2: qu1</i>	-0.315	0.082	0.730	0.622	0.856
<i>qu3: qu1</i>	-0.300	0.081	0.741	0.632	0.867
<i>qu4: qu1</i>	-0.353	0.082	0.703	0.598	0.825
<i>qu5: qu1</i>	-0.430	0.086	0.651	0.550	0.770

Notes: Area under the ROC curve: 0.763. Confusion matrix results (cut point = 0.5): True positive = 65.85%, True negative = 9.95%, False positive = 18.31%, False negative = 5.87%.

Table 7. Estimated parameters and odds ratios in logistic regression (dependent variable - mother's paid employment: yes/no) in 2021

Variable <i>category: reference category</i>	Coefficient	Standard error	Odds ratio	95% confidence interval for odds ratio	
				Lower	Upper
Child with a disability <i>yes: no</i>	-1.823	0.122	0.162	0.127	0.205
Education attainment level					
<i>lower secondary or below: tertiary</i>	-2.088	0.140	0.124	0.094	0.163
<i>basic vocational: tertiary</i>	-1.685	0.083	0.185	0.158	0.218
<i>upper secondary: tertiary</i>	-1.179	0.066	0.307	0.270	0.350
Age of the mother (in years)					
<i>[18,25): [35,40)</i>	-0.917	0.209	0.400	0.265	0.602
<i>[25,30): [35,40)</i>	-0.242	0.108	0.785	0.635	0.970
<i>[30,35): [35,40)</i>	-0.126	0.080	0.881	0.753	1.032
<i>[40,45): [35,40)</i>	0.200	0.081	1.221	1.042	1.431
<i>[45,50): [35,40)</i>	0.165	0.102	1.179	0.965	1.441
<i>[50+): [35,40)</i>	-0.197	0.128	0.821	0.639	1.055
Age of the youngest child (in years)					
<i>[3, 6): [0, 3)</i>	0.431	0.079	1.538	1.317	1.796
<i>[6, 9): [0, 3)</i>	0.874	0.095	2.395	1.989	2.885
<i>[9,12): [0, 3)</i>	0.987	0.103	2.684	2.191	3.288
<i>[12,15): [0, 3)</i>	1.243	0.117	3.465	2.757	4.354
<i>[15,18]: [0, 3)</i>	1.400	0.129	4.054	3.148	5.221
Class of locality					
<i>less than 20 thousand: rural</i>	-0.019	0.089	0.981	0.824	1.168
<i>20 - 99 thousand: rural</i>	0.146	0.080	1.158	0.989	1.355
<i>100 - 199 thousand: rural</i>	0.243	0.111	1.275	1.025	1.586
<i>200 - 499 thousand: rural</i>	0.122	0.113	1.129	0.904	1.410
<i>500 thousand and more: rural</i>	0.502	0.102	1.653	1.354	2.017
Number of children					
<i>2: 1</i>	-0.155	0.063	0.856	0.757	0.968
<i>3+: 1</i>	-0.540	0.086	0.583	0.492	0.690
Disposable equivalent income from other members (quintile groups)					
<i>qu2: qu1</i>	-0.275	0.090	0.760	0.637	0.907
<i>qu3: qu1</i>	-0.447	0.085	0.639	0.542	0.755
<i>qu4: qu1</i>	-0.518	0.085	0.596	0.505	0.703
<i>qu5: qu1</i>	-0.607	0.088	0.545	0.458	0.648

Notes: Area under the ROC curve: 0.766. Confusion matrix results (cut point = 0.5): True positive = 71.06%, True negative = 7.38%, False positive = 17.22%, False negative = 4.34%.

Table 8. Points (and standard errors) derived from logistic regression estimates (dependent variable - mother's paid employment: yes/no)

Variable <i>category</i>	Year	Points (standard error)		
		2010	2019	2021
Child with a disability				
<i>yes</i>		0.0 (5.7)	0.0 (6.3)	0.0 (8.0)
<i>no</i>		55.4 (4.3)	64.3 (4.8)	87.3 (5.7)
Education attainment level				
<i>lower secondary or below</i>		0.0 (4.4)	0.0 (6.2)	0.0 (8.3)
<i>basic vocational</i>		26.6 (3.8)	29.5 (5.0)	19.3 (6.1)
<i>upper secondary</i>		49.0 (3.9)	51.5 (4.8)	43.5 (5.8)
<i>tertiary</i>		100.0 (4.3)	100.0 (4.8)	100.0 (5.7)
Age of the mother (in years)				
<i>[18,25)</i>		0.0 (5.2)	0.0 (6.7)	0.0 (10.4)
<i>[25,30)</i>		15.2 (4.1)	7.8 (4.7)	32.3 (6.1)
<i>[30,35)</i>		32.5 (4.0)	19.0 (4.5)	37.9 (5.4)
<i>[35,40)</i>		36.5 (4.3)	27.3 (4.8)	43.9 (5.7)
<i>[40,45)</i>		33.4 (4.7)	31.3 (5.2)	53.5 (6.3)
<i>[45,50)</i>		23.9 (5.2)	28.4 (5.8)	51.8 (7.0)
<i>[50+)</i>		15.7 (5.6)	8.6 (6.6)	34.5 (7.8)
Age of the youngest child (in years)				
<i>[0, 3)</i>		0.0 (4.3)	0.0 (4.8)	0.0 (5.7)
<i>[3, 6)</i>		35.5 (4.5)	21.3 (4.8)	20.6 (5.7)
<i>[6, 9)</i>		52.2 (4.7)	37.0 (5.1)	41.8 (5.9)
<i>[9,12)</i>		62.0 (4.8)	43.1 (5.1)	47.3 (6.0)
<i>[12,15)</i>		71.9 (4.9)	57.5 (5.6)	59.5 (6.3)
<i>[15,18]</i>		76.4 (5.0)	64.3 (5.7)	67.0 (6.6)
Class of locality				
<i>rural</i>		11.3 (4.3)	0.0 (4.8)	0.9 (5.7)
<i><20k</i>		0.4 (4.7)	2.3 (5.5)	0.0 (6.5)
<i>20-99k</i>		3.2 (4.5)	7.2 (5.1)	7.9 (6.2)
<i>100-199k</i>		0.0 (5.3)	8.2 (5.9)	12.6 (7.0)
<i>200-499k</i>		1.9 (5.1)	6.5 (5.7)	6.7 (7.0)
<i>>500k</i>		21.8 (5.1)	24.6 (5.5)	25.0 (6.5)
Number of children				
<i>1</i>		-	29.3 (4.8)	25.9 (5.7)
<i>2</i>		-	16.5 (4.4)	18.4 (5.3)
<i>3+</i>		-	0.0 (4.5)	0.0 (5.5)
Number of adults				
<i>1</i>		13.7 (5.8)	1.1 (6.0)	-
<i>2</i>		0.0 (4.3)	0.0 (4.8)	-
<i>3</i>		6.3 (4.8)	0.6 (5.4)	-
<i>4+</i>		9.9 (4.9)	10.3 (5.6)	-
Disposable equivalent income from other members (quintile groups)				
<i>qu1</i>		12.1 (4.3)	18.5 (4.8)	29.1 (5.7)
<i>qu2</i>		6.4 (4.0)	4.9 (4.5)	15.9 (5.8)
<i>qu3</i>		1.0 (4.1)	5.6 (4.4)	7.6 (5.4)
<i>qu4</i>		0.0 (4.0)	3.3 (4.3)	4.2 (5.3)
<i>qu5</i>		1.8 (3.8)	0.0 (4.3)	0.0 (5.3)