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Female mayors do not lead to greater childcare provision – Evidence from Polish municipalities

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(Received 25 July 2024; revised 27 January 2025; accepted 11 February 2025)

Abstract

The studies of descriptive political representation demonstrate that the share of women amongst local elected officials increases, but mayors are still predominantly men. This paper contributes to the literature on the link between the descriptive and substantive representation of women at the local level. It investigates the influence of mayors' gender on the development of local childcare policies in Poland. We employ quasi-experimental research schemes (difference-in-differences and generalised synthetic control) to study changes in childcare provision and public spending on nurseries and kindergartens. We merged electoral data (changes on the mayoral position) and registry data on local budget expenditures and service availability covering a period of more than 16 years. We do not find any systematic causal link, suggested by the extant literature on substantive representation, between the election of a female mayor and the expansion of childcare services.

Keywords: mayors; female representation; local childcare policy; Poland; difference-in-differences; generalised synthetic control

Introduction

The underrepresentation of women amongst elected officials has been investigated and targeted with different interventions and campaigns, to achieve not only higher shares of female decision-makers, but also higher policy responsiveness to gender-based interests. Using the classical Pitkin's distinction, the stake of these actions is not only descriptive or symbolic political representation, but also substantive representation, defined as 'acting in the interests of the represented in a manner responsive to them' (Pitkin, 1967, p.209). It is generally expected that more women occupying positions of power at different levels of government will bring policies responding to women's interests. The main assumption is that women may prioritise different policy areas compared with their male counterparts. They would focus more on social inclusion, gender equality and welfare policies that are

stereotypically associated with their gender: health, childcare or education. Nonetheless, the extant empirical evidence verifying this assumption is rather scarce and brings mixed conclusions.

In this paper, we verify how female executive political leaders at the local level pursue policy priorities related to childcare. This policy area is critical not only because it is still stereotypically labelled as ‘feminine’, but – even more importantly – because it has been demonstrated that the availability of affordable public childcare significantly improves the situation of women in the labour market and contributes to greater gender equality (Baker, Gruber & Milligan, 2008).

We focus on the institutional context that has been understudied thus far – local governments in Poland. As in many decentralised countries, elected local authorities in Poland are responsible for many important policy areas, including primary education, basic infrastructure and utilities (water, sewage), social care and child- and elderly care, and have considerable financial and policy discretion. At the same time, Poland has experienced a significant development of childcare services that are available locally. Various European Union (EU) and central government policies have assisted local authorities, particularly outside of the largest urban centres, in expanding childcare provision in recent decades.

In what follows, we empirically test the expectation that female decision-makers at the local level use policy discretion differently than men, more likely implementing policies that are in line with women’s interests. Using fine-grained data on local budgets and official indicators related to the local availability of nurseries and kindergartens, we employ a difference-in-differences design to trace the effects of a personal change in the mayoral office – that is, when a woman replaces a male incumbent. We focus on the changes in the mayoral position, as Poland represents a ‘strong mayor’ system of local government (Heinelt *et al.*, 2018). In such a system, sometimes described as ‘local presidentialism’, the directly elected mayor remains the key decision-maker, who controls both the political agenda and the local administration.

We do not find systematic and substantial causal effects of a mayor’s gender on the increase of available places in kindergartens and nurseries, as well as public spending on childcare provision at the local level. This result is robust to various specifications of our models and suggests that even having certain discretion over local childcare policies, women in office did not prioritise childcare more than their male counterparts. They also did not respond quicker to the incentives stimulating the development of childcare services at the local level. We speculate that such a result may stem from the fact that women in Poland are still rarely elected to mayoral positions, and those elected tend to follow the mainstream policy priorities, focussed more on infrastructural investments than the development of local welfare.

The paper is structured as follows. First, we discuss the theoretical link between descriptive and substantive political representation. We review the existing studies that traced the differences in policy priorities of male and female politicians and divergent policy outcomes in the jurisdictions governed by male and female officials. In the subsequent section, we briefly present the institutional setting, the research design, indicators (outcome variables) analysed in our models and an original dataset used in this analysis. The following section presents the main results and the additional tests, including the generalised synthetic control (GSC) method, that

reinforce the interpretation of the baseline DiD models. In the last section of the paper, we summarise and discuss our findings.

Do women and female politicians have different policy priorities?

It is generally assumed that the differences in policy priorities and preferences between men and women legislators mirror the differences observed amongst the citizenry, as women politicians share experience with women in general (Ferreira & Gyourko, 2014). Various surveys of general populations document the divergent policy preferences of men and women, even if other background characteristics are controlled (Applegate, Cullen & Fisher, 2002; Finseraas, Jakobsson & Kotsadam, 2012; Gottlieb, Grossman & Robinson, 2018; Jaffee & Hyde, 2000; Shapiro and Mahajan, 1986). These differences are typically explained by two mechanisms: one refers to the socialisation into gender roles and stereotypes, and the other assumes the rational calculation and promotion of gender-based interests (Shorrocks & Grasso, 2020).

Socialisation of gender roles has long-lasting influences on social perceptions, which translate into political priorities and preferences. For a long time, women have been stereotyped as communal, compassionate, collaborative and family oriented, while the masculine stereotypes have been centred around agentic, goal-oriented and instrumental traits (Eagly & Steffen, 1984). This stereotypical division between ‘caregivers’ and ‘breadwinners’ corresponds to the division of policy areas (portfolios), popularly labelled as either more feminine, such as childcare or education, or more masculine, such as entrepreneurship, roads or defence. In consequence, men and women tend to support policies that are related to the interests stereotypically aligned with their gender.

The observed differences in policy preferences might also stem from rational calculations. As long as women are disproportionately burdened with caring for children, the elderly and the ill (and they are indeed, even in the most gender-equal societies), they should have a real interest in higher redistribution and expanded welfare services. Women use education, health and social care services either for themselves or for their children and parents to a greater extent than men. At the same time, men, typically less entrenched in the welfare system, may prefer limited public expenditures and low taxation (Iversen & Rosenbluth, 2006). Although women are not more likely to support leftist parties in all contexts, they tend to prefer active labour market policies, particularly in countries with higher divorce rates and higher female labour market participation (Iversen & Rosenbluth, 2006, pp.17–18). As Morgan (2013) demonstrated, political parties, particularly when facing electoral instability and dealignment of the core constituencies, often attempted to strategically respond to women’s preferences by expanding work–family policies. Shorrocks and Grasso (2020) additionally argue that the gender gap in policy preferences is context-dependent: larger and more stable across generations in contexts characterised by low welfare provision, such as the USA, and weaker in the more welfare-oriented settings, such as the UK.

Gender differences in policy preferences amongst the electorate do not translate automatically into the differences in legislators’ policy choices, but we may expect

that the officeholders' gender contributes to the explanations of policy change. Under the classical median voter theorem (Downs, 1957), the gender of an elected decision-maker is irrelevant to policy choices, as all politicians are incentivised to converge towards the policy position of a median voter. However, when we take into account more realistic premises, such as personalisation of elections, political leadership based on individual traits and imperfect electoral accountability, a politician's identity becomes a plausible factor in explaining their policy choices and outcomes. Under the citizen–candidate model (Alesina, 1988; Besley & Coate, 1997; Osborne & Slivinski, 1996), politicians can inject their preferences into public policies. In addition, the 'politics of presence' model of political representation assumes that female politicians bring different interests and issues to politics (Mansbridge, 1999). It pertains particularly to 'women's issues', defined as those that directly and disproportionately affect women, or that due to traditional gender roles mostly influence women (Besley & Case, 2003). In such theoretical frameworks, it is valid to expect that an increasing representation of a particular category (let it be gender, class, race or age cohort) amongst elected officials leads to a systematic policy change, modification of spending patterns or a procedural change in the sheer decision-making process.

The question concerning the causal relationship between the officeholders' gender and the implemented policies has already been posed concerning the policies determined at the national level, such as reproductive rights (Berkman & O'Connor, 1993), maternity leaves (Kittilson, 2008), family benefits (Ennsner-Jedenastik, 2017), social investment policies (Garritzmann & Schwander, 2021), developmental aid (Hicks, Hicks, & Maldonado, 2016) and defence spending (Koch & Fulton, 2011).

At the local level, several surveys of local politicians indicate that women and men in office have different policy preferences, generally aligning with the stereotypes of masculine and feminine issues (Slegten, Geys & Heyndels, 2019; Slegten & Heyndels, 2020; Svaleryd, 2009). A growing body of scholarly literature directly investigates policy outcomes rather than policymakers' preferences. The composition of local councils and the mayor's gender are used to explain the observed differences between jurisdictions. Numerous local government units with the local authorities' discretion over the distribution of basic public goods, particularly in decentralised states, offer a very good analytical leverage to use experimental and quasi-experimental designs. In particular, difference-in-differences (DiD) or regression discontinuity (RD) designs are used to pinpoint the causal relationship between descriptive and substantive representation using observational data.

The pioneering study of Chattopadhyay and Duflo (2004) exploited a natural experiment with reserved seats in India, which demonstrated that local leaders invest more in infrastructure that is relevant to the needs of their gender. Ferreira and Gyourko (2014) used RDD to analyse the results of mixed-gender mayoral races in the USA between 1950 and 2005 and did not find systematic differences in total public expenditures, taxation, employment in local administration, health, welfare, leisure, infrastructure or various crime rates. These results held both in the short and the long run. Similar null results, yet with slightly different sets of outcome indicators, have been obtained in the analyses of local governments in Spain (Campa, 2011; Gago & Carozzi, 2021), Italy (Casarico, Lattanzio & Profeta, 2022;

Gagliarducci & Paserman, 2012; Rigon & Tanzi, 2012), Czechia (Kuliomina, 2021), Korea (Jung, 2022) and Norway (Geys & Sørensen, 2019).

Systematic differences in spending or policy outcomes attributed to the officeholder's gender are found less often. Funk and Philips (2019) showed that newly elected female mayors in Brazil systematically modified the distribution of public funds in accordance with the interests more important for their gender: they allocated more for education, healthcare and social assistance, and less on transportation and urban development, relative to their male counterparts. Ordine et al. (2023) demonstrated that the increased presence of women in local politics leads to slightly reduced public spending, except for childcare and social care. This finding is generally in line with another study of cuts in local budgets: Cabaleiro Casal and Buch Gómez (2018) found that forced to reduce spending, female mayors are more likely to preserve social spending than their male counterparts. Earlier, Holman (2014) reported that US cities with female mayors were more likely to participate in funding social welfare programs. Bratton and Ray (2002) found that the local childcare systems in Norway developed quicker in municipalities with higher shares of women local councillors. They argue, however, that this effect was more evident in the period of policy innovation and faded out over time. This observation led the authors to a broader generalisation that descriptive representation is more closely related to policy innovation or early adoption than expansion or maintenance of an existing policy (Bratton & Ray, 2002, p.436). Several other studies confirmed the relationship between female descriptive representation and the development of local childcare or education, for example, in Sweden (Svaleryd, 2009), Germany (Hessami & Baskaran, 2019; Yamada, 2024) and Austria (Walenta-Bergmann, 2023).

The tentative conclusion from this literature is that the effects of the local officeholders' gender on substantive policy are not universal. Hessami and da Fonseca (2020), in their recent meta-analysis, argue that the increase in female descriptive representation causes a better provision of public goods in developing countries. In developed countries, the officeholder's gender tends to matter less, and the differences in spending patterns are not systematic. Yet, the picture is even more complex. Many studies highlight the contingency of gender effects on spending or policy outcomes, stressing the importance of the institutional context (Koch & Fulton, 2011), the political leaning of the whole council (Walenta-Bergmann, 2023), the extent of women's representation in other offices (Funk & Philips, 2019; Holman, 2014; Koch & Fulton, 2011) and intersectional identities (Clots-Figueras, 2011).

In this paper, we focus on female representation amongst local executives and search for causal evidence on whether the election of women leads to changes in the provision of childcare and spending on this service. The advantage of our approach is that we are able to compare the possible impact of the mayor's gender on both service coverage and public spending. With two different types of indicators from different data sources and fine-grained yearly data covering four consecutive terms, the analyses should lead to more robust conclusions. Noteworthy, within the period of our analyses, we are able to capture a dynamic development of childcare services in Poland that occurred in the recent decade. The subsequent section provides more contextual information on this process.

Table 1. Women amongst local elected officials in Poland, 2002–2018

	2002	2006	2010	2014	2018
% Female mayors	6.7	8.2	9.2	10.7	12.0
% Female councillors	17.9	21.2	25.2	27.3	30.3

Institutional context: mayors as policymakers

Polish local governments offer a favourable context to investigate the linkage between the descriptive and substantive representation of women. Due to the concentration of power in the local executives, instead of the proportion of women amongst councillors, we may look at the mayor's gender as an explanation of local policies. It reflects the fact that mayors are the key policymakers when it comes to local services. Heinelt *et al.* (2018) place Poland amongst the European countries with the highest values of 'mayoral strength index'. Mayors in Poland are elected directly, under a majoritarian two-round system, simultaneously with the municipal councils (elected under the First-past-the-post (FPTP) rule in municipalities below 20,000 inhabitants and under the open-list proportional representation system (OLPR) in larger municipalities). Mayors currently serve a 5-year term (4-year term before 2018). Having a direct mandate, they can be recalled only in a popular referendum. In such cases, a minimal turnout threshold is required, which makes the potential recall very unlikely (Gendźwiłł & Swianiewicz, 2018). A majority of mayors in Poland are not formally affiliated with any national party, usually running as candidates representing local independent lists.

Mayors in Poland typically control the council majority, although the electoral rules allow for the formation of a divided local government. However, even with an unstable or opposing council majority, executive mayors can still pursue their agenda as the key decision-makers. They do not preside over the council, but co-define the council agenda, enjoying the exclusive prerogative to submit the budget proposal. In practice, councillors can introduce only small amendments and influence local policies. As the independent civil service at the local level is almost non-existent, mayors practically control the local administration, appoint the heads of administrative departments, and have a strong influence on municipal institutions (schools, kindergartens, libraries) and agencies delivering basic services.

Poland has been experiencing a slow increase in the share of women amongst local councillors and mayors (Table 1). While the percentage of women amongst local councillors exceeded 30 per cent after the 2018 elections, and at that time was comparable to the level of female descriptive representation in the national parliament, there is still a huge legislative–executive gender gap, with only 12 per cent of women amongst mayors elected for the term 2018–2023.

Local childcare is one of the policy areas that underwent a substantial and dynamic change in recent decades. Incentivised initially by the EU structural funds and subsequently by the central government programs (with a flagship Toddler [*Maluch*] program established in 2011), local governments have been developing infrastructure to secure preschool education and early childcare. Many local governments supported subsidised private childcare facilities to meet the increased local needs. It was in response to an increasing demand related to social

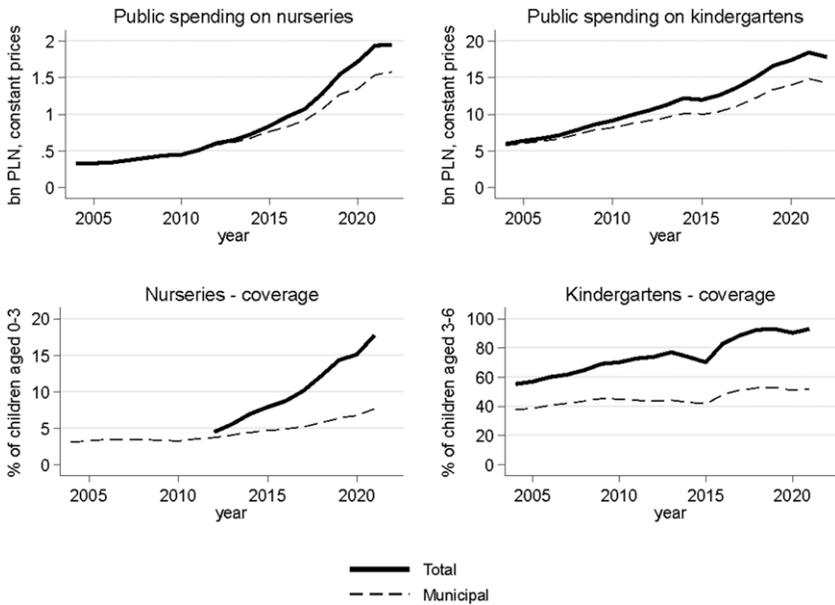


Figure 1. Development of local childcare services in Poland, 2002–2022.

Source: Statistics Poland, Ministry of Finance.

Note: Data on children enrolled in private nurseries unavailable before 2012.

modernisation, changes in the model of family and changes in the labour market (Szelewa, 2012; Szelewa & Polakowski, 2008). Figure 1 demonstrates that from 2005 to 2020 the share of children enrolled in various childcare facilities grew from around 55 per cent to 90 per cent for the cohort between 3 and 6 years old and from less than 5 per cent to 15 per cent for the cohort between 0 and 3 years old.¹ Thus, Poland serves as a very good example of a dynamic change in public service that is strategically important for women's interests.

Both tasks – provision of childcare for children up to the age of 3 years and preschool care for the cohort aged 3–6 years – are part of a municipality's own tasks in Poland. In preschool services, the public sector plays a dominant role, when one takes into account both coverage and financing: 73 per cent of children enrolled in preschool education attended kindergartens run by municipalities. In addition, preschool services are predominantly financed by public funds. Private kindergartens receive a grant from the local budget (for each child enrolled), which is equal to the basic maintenance cost in a public kindergarten (this rule has been in force since 2013; previously, since 2007, the grant was at least 75 per cent of the basic cost). The funds transferred from municipal budgets to private entities for the current operation of kindergartens in 2022 accounted for 20 per cent of all current expenditures on preschool education.

The situation is slightly different in the case of care for younger children (under 3 years). Most nurseries are private, and more than half of the available places operate in this sector. In 2021, 57 per cent of children under the age of 3 years attended private nurseries. However, local governments have some influence on the

development of this sector. Local authorities keep a register of nurseries, supervise and verify compliance with sanitary requirements. They often provide subsidies to private nurseries (in 2022, these grants constituted almost 20 per cent of the current expenditures allocated to the nursery care system).

Data and methods

In the subsequent analyses, we rely on the difference-in-differences (DiD) design as our basic specification. DiD is a quasi-experimental scheme using panel regression (Meyer, 1995; Roth et al., 2023) to trace the causal relationship between the treatment and the outcome. It relies on a counterfactual assumption that in the absence of intervention, the treatment group and the control group would have followed parallel trends over time. To estimate the treatment effect, the difference between the pre-treatment and post-treatment period observed in the treatment group is subtracted from the analogous difference in the control group. DiD scheme is well suited to analyse time series, potential delays and durability of the effects.

In our case, the binary treatment variable represents the election of a female mayor who replaces a male incumbent (regardless of whether he retired or was defeated). The outcomes are four indicators measuring the scope (coverage) of local childcare policies: two related to the nurseries (and similar forms of institutionalised care for children below the age of 3 years) and two related to the preschools (and similar forms dedicated for children between 3 and 6 years old). For the sake of comparability, we investigate the number of children covered by the service in the particular municipality divided by the number of children from the target cohort (0–2 for nurseries, 3–6 for kindergartens). We analyse the total coverage rates, including both public and private facilities, as the latter were typically subsidised by local governments (see Section 3). Similarly, current municipal budget expenditures are expressed in PLN per capita.² We focus on the current expenditures reported post hoc in the standardised budgetary reports, as they account for the vast majority of municipal expenditures on childcare (more than 80 per cent). They are also more stable, as investment expenditures are characterised by greater fluctuations between years and greater dependence on external factors, such as the availability of EU funds. Table 2 presents definitions of the variables used as outcomes in our analyses.

If the mayor's gender influences local childcare policy in the way stipulated by the literature, we should observe a systematic change of these indicators, more precisely, *positive* treatment effects, which could be attributed to the election of a woman in place of a man.

The group of treated municipalities with newly elected female mayors is contrasted with the control group composed of the municipalities where a male mayor replaced another man in office. By excluding (quite numerous) municipalities in which incumbents were re-elected, we make treatment and control groups more similar and single out potentially confounding effects of novelty or incumbency. We also verified whether the election of a female mayor could be an indicator of a more general preference of local electorates for female politicians, which would imply problems with endogeneity. We found that in each term, the percentage of women amongst municipal councillors increased, and the magnitude

Table 2. Outcome variables

Indicator	Definition	Sources and coverage
Children in nurseries	Number of children in nurseries (<i>żłobki</i>), nursery wards (<i>oddziały żłobkowe</i>) and children's clubs (<i>kluby dziecięce</i>) per 100 children aged 0–3 years	Statistics Poland (GUS) 2006–2022
Children in kindergartens	Number of children in kindergartens (<i>przedszkola</i>), kindergarten points (<i>punkty przedszkolne</i>), preschool education teams (<i>zespoły wychowania przedszkolnego</i>) and preschool wards in primary schools (<i>oddziały przedszkolne</i>) per 100 children aged 3–6 years	Statistics Poland (GUS) 2006–2022
Current budget expenditures for nurseries	Current municipal budget expenditures for nurseries in PLN per child aged 0–2 years	Ministry of Finance 2006–2022
Current budget expenditures for kindergartens	Current municipal budget expenditures for kindergartens in PLN per child aged 3–6 years	Ministry of Finance 2006–2022

of these increases was never larger amongst the municipalities in which a woman was elected for a mayoral position.

We estimate our models separately for each 4-year term, treating the previous term (t , $t-1$, $t-2$, $t-3$) as the pre-treatment period and four consecutive years ($t+1$, $t+2$, $t+3$, $t+4$) as post-treatment periods. By doing so, we can trace the persistence of the assumed treatment effects over time and their potential interferences with the political budget cycle. As in each electoral cycle a different set of municipalities receives treatment (i.e. a newly elected female mayor), and some of the municipalities treated in one term may be part of the control group constructed for the subsequent term, we do not pool our observations and thus are not able to employ a staggered design (Roth et al., 2023), which would allow for multiple treatments occurring in different timepoints and a longer time horizon to observe potential policy change. We argue that the current expenditures for childcare and enrolment indicators (including places both in public facilities and publicly funded private facilities) are able to capture policy change, if it occurs, quicker than the investment expenditures related to longer planning processes.

The decision to include the election year (t) in the pre-treatment period is motivated by the timing of local elections in Poland. During the whole analysed period, local elections were held either in October or November, with mayors assuming their duties in November or December, which means that the potential influence of newly elected local authorities on local budgets and policy outcomes was rather negligible.

We compiled the official election results for almost 2,500 municipalities starting from the 2006 elections. We excluded from our sample cities with county status – 66 large urban municipalities which are simultaneously counties, as the scope of their responsibilities differs significantly from other municipalities. Additionally, in our

analysis, we excluded municipalities that significantly changed their administrative borders (thus, also their area and population), as it might be assumed that these territorial changes profoundly changed municipalities' financial situation and local demand for public services. This case concerned only twenty-eight municipalities, which make up about 1 per cent of the whole sample. Separately for each outcome variable, we also excluded municipalities for which the time series of the outcome variables were incomplete or included anomalies, most likely attributable to one-off events or the quality of reporting.³

On the basis of the electoral records, we selected municipalities in which a woman replaced an incumbent man (313 cases in three electoral cycles) and municipalities in which a man was elected to replace an incumbent man (1,749 cases in three electoral cycles). In fact, for each term, control and treatment groups are composed of different municipalities. Taking into account the aforementioned low level of female representation, it is not surprising that the control group is about six times larger than the treatment group. The descriptive statistics of the outcome variables are presented in the Appendix (Table A1). We verified the pre-treatment balance of the relevant covariates (population size, operating surplus per capita, the share of female councillors and the mayor's age; the results are reported in Table A2 in the Appendix). In four out of twelve balance tests, the differences between the treatment and control groups were statistically significant (p -values below 0.1), thus we decided to include these variables as additional controls in our DiD models. In the subsequent section, we present models with and without covariates.

We estimated average treatment effects on the treated (ATET) separately for each of the four outcomes and for each term by fitting a linear regression model with time and municipality fixed effects. For each model, we tested the parallel trends assumption (PTA) verifying whether, in the pre-treatment period, the (linear) trends in the outcome variables were parallel between the control and treatment groups. In the second step of the analysis, by including leads and lags of the variable indicating treatment, we tested whether the treatment effects were time specific. This is done for two purposes. First, to verify whether the effects can be observed in anticipation of the treatment – it could be the case if, for example, male incumbents had changed the policy being challenged by a female contender. Second, to verify whether the effects of the treatment appear delayed, as the establishment or expansion of the service may take some time.

Subsequently, to test the robustness of our results, we report the analyses using generalised synthetic control (GSC; Xu, 2017), a more complex research design that allows for the presence of unobserved time-varying confounders affecting units differently. GSC builds upon earlier synthetic control approaches (Abadie, Diamond & Hainmueller, 2010). While both GSC and DiD assume strict exogeneity, GSC offers an important advantage in handling the parallel trends assumption, as it allows for the presence of unobserved time-varying confounders. This approach estimates latent factors and factor loadings, enabling unit-specific responses to unobserved confounders. We used so-called matrix completion (MC) techniques, as proposed by Athey *et al.* (2021), and a data-driven approach to construct the synthetic control unit and impute counterfactuals. The basic idea of the MC method is to view the panel data as a matrix where rows represent units (e.g. countries, regions) and columns represent periods. Some entries in this matrix are observed,

while others (the counterfactuals) are missing. The goal is to ‘complete’ the matrix by estimating these missing values. This is done by assuming the matrix has a low-rank structure, meaning the product of two lower-dimensional matrices can approximate it; this implies that a small number of underlying factors explain most of the variation in the data.

Although we believe that the GSC may further improve the reliability and validity of our estimation, one should notice that GSC relies on sufficient pre-treatment data to accurately estimate latent factors and factor loadings. The fewer the pre-treatment observations, the less reliable synthetic control units.

Results

Before describing the baseline DiD models, we graphically explore the trends in the outcome variables in two groups of municipalities. In Fig. 2, we present the average levels of four indicators before (between $t-3$ and t) and after the treatment (between $t+1$ and $t+4$). The graphs clearly show that for almost all indicators and all terms, the averages in control and treatment groups run in parallel, which already suggests that there are no effects of replacing a male mayor with a female mayor.

Baseline results

Table 3 presents the estimated treatment effects on the basis of the difference-in-differences models. We estimate these effects separately for each of the four outcome variables and each of the three periods (terms of office). Additionally, the entries in the two rightmost columns report the results of the formal test of the parallel trends assumption (PTA), known as the Granger-type causality test. For each of the pre-treatment years, it reproduces the differences-in-differences model with counterfactual treatment-time indicators – as if the treatment (i.e. the replacement of an incumbent male mayor) was introduced earlier. The null hypothesis of this test indicates that there was no effect in anticipation of treatment. Consequently, rejecting the null hypothesis of this test means that the PTA is violated. It can be noticed that the PTA is met in all cases except one: the expenditures on nurseries during the term 2018–2022.

We find no systematic effects of the election of a female mayor on the analysed outcome variables related to childcare services. Almost all of the estimates in our models are statistically non-significant at the conventional 95% level. The point estimates of the effects are rather small (below 1 percentage point for both kindergartens and nurseries) and have divergent signs in different periods. The only statistically significant treatment effects are observed for municipal expenditures on kindergartens in the term 2010–2014 ($p = 0.057$) and the term 2018–2022 ($p = 0.091$). Contrary to expectations, they are negative, which means that after the elections in 2010 and 2018, in the group of treated municipalities (i.e. with female mayors replacing incumbent male mayors), the expenditures on kindergartens on average increased by, respectively, 165 and 168 PLN per capita less than amongst the municipalities with newly elected male mayors (control group). Taking into account the average levels of annual expenditures on kindergartens (between 3,000 PLN and 4,500 PLN per capita during the 2010–2014 term and between 6,000 PLN and 8,000

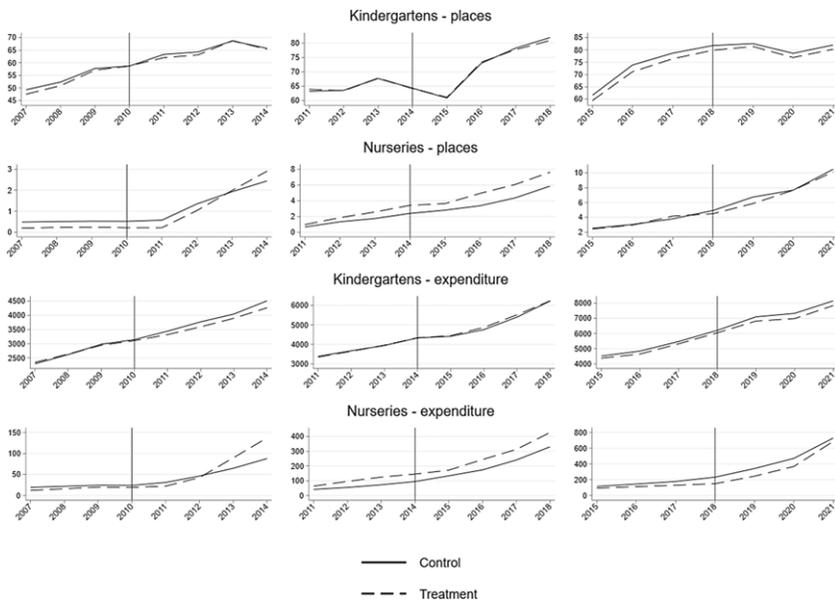


Figure 2. Trends in the outcome variables amongst control and treatment groups of municipalities.

PLN during the 2018–2022 term), one may conclude that the magnitude of this effect is rather small. Additionally, it is not accompanied by a significant analogous decrease in service coverage – thus, this pattern is not consistent.

Time-specific effects

In the subsequent step, we investigated the heterogeneity of the treatment effects over time. As we analysed annual data in balanced panels, we augmented the baseline model with dummy variables representing leads and lags of the treatment. The results of this analysis for all outcome variables are plotted in Fig. 3. Here, it is even more visible that there are barely any significant treatment effects associated with the election of a female mayor.

Extensions and robustness checks

We tested alternative models with binary outcome variables, that adopt the value 1 for municipalities in which there were *any* places in kindergartens or nurseries, respectively, and value 0 for municipalities with no places in kindergartens or nurseries. By doing so, we focus on whether a municipality has *any* nursery or kindergarten. The change in this outcome captures something different than in the baseline models: an increase from 0 to 1 means that the first childcare facility was opened in the period under study. Thus, in this case, the policy change is conceptualised as the establishment, not the expansion of the existing service. In the studied period, such a change referred predominantly to nurseries, as kindergartens (or similar forms of institutionalised childcare) already existed in a vast majority

Table 3. Estimates of the baseline differences-in-differences models

Outcome	Term	N control	N treated	DiD estimates, without covariates				DiD estimates, with covariates			
				ATET (SE)	p-Value	Granger test (PTA)		ATET (SE)	p-Value	Granger test (PTA)	
						F	p-Value			F	p-Value
<i>Children in kindergartens</i>	2010–14	530	84	0.281 (1.167)	0.809	0.63	0.597	0.392 (1.171)	0.738	0.54	0.657
	2014–18	645	113	-0.357 (0.813)	0.661	0.59	0.620	-0.306 (0.816)	0.708	0.59	0.624
	2018–22	568	115	0.733 (0.733)	0.317	0.67	0.569	0.670 (0.724)	0.355	0.69	0.560
<i>Children in nurseries</i>	2010–14	521	83	0.252 (0.376)	0.504	0.63	0.595	0.241 (0.369)	0.514	0.59	0.621
	2014–18	642	112	0.797 (0.594)	0.180	0.56	0.644	0.768 (0.588)	0.192	0.57	0.637
	2018–22	566	114	-0.354 (0.704)	0.615	1.02	0.383	-0.450 (0.713)	0.528	0.84	0.818
<i>Kindergartens – expenditures per child</i>	2010–14	530	84	-171.021* (86.667)	0.049	0.67	0.570	-165.471* (86.774)	0.057	0.86	0.462
	2014–18	645	113	80.287 (81.819)	0.327	0.32	0.814	79.685 (80.805)	0.324	0.41	0.749
	2018–22	568	115	-146.012 (99.518)	0.143	0.70	0.553	-167.836* (99.263)	0.091	0.71	0.546
<i>Nurseries – expenditures per child</i>	2010–14	530	84	20.996 (19.062)	0.271	0.09	0.966	20.408 (18.645)	0.274	0.14	0.934
	2014–18	641	112	27.849 (38.937)	0.475	1.23	0.296	28.738 (39.208)	0.464	1.31	0.270
	2018–22	561	115	-34.379 (55.736)	0.538	3.45	0.016	-36.415 (56.126)	0.517	2.63	0.049

Notes: Robust standard errors, clustered by municipalities,

*p=0.1.

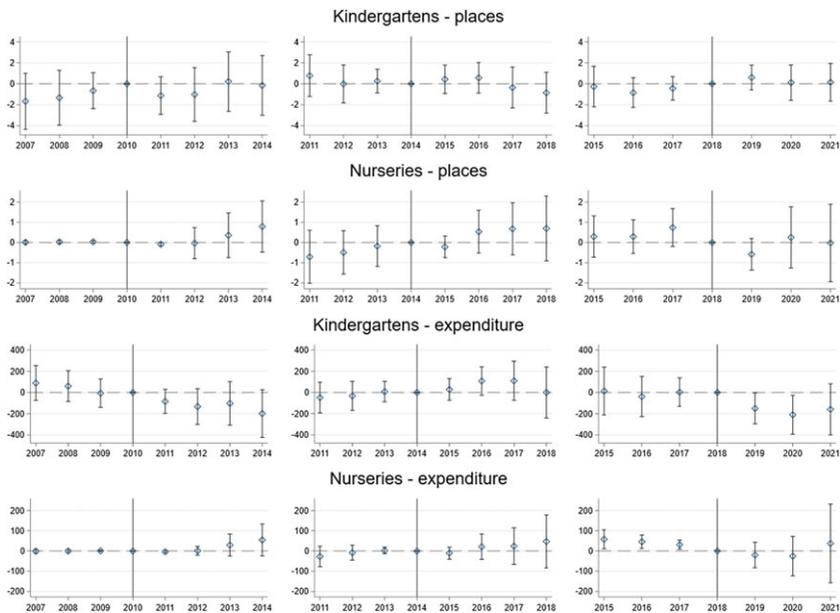


Figure 3. Effects of electing a woman mayor on outcome variables (models with covariates).
Note: The graphs present point estimates with 95% CI, separately for each pre- and post-treatment year.

(99%) of municipalities. Thus, we estimate treatment effects only for the nurseries (Table 4).

In this case, we also find no significant effects of electing a female mayor on the analysed outcome variables related to childcare. The estimated treatment effects are very close to 0 for both indicators and all terms under study.

Heterogeneity of treatment effects

In this sub-section, we will analyse the heterogeneity of treatment effects. As in the full sample of municipalities, we found null effects, and may assume that the ambiguous outcome may be a result of divergent effects amongst different sub-groups of municipalities. Here, we tested the heterogeneity of treatment effects in the sub-groups distinguished on the basis of the municipal characteristics that may affect childcare service delivery. These are covariates already used in the baseline models: (1) municipality population size and (2) the financial condition of a municipality, measured by the local budget operating surplus per capita, an indicator commonly used in the comparative local finance to approximate financial capacity of local government units. Additionally, following the ‘critical mass’ argument that appears in the literature stemming from the idea of ‘politics of presence’, we contrasted municipalities with high and low shares of women amongst local councillors (3). Here, we follow the assumption that it is easier to pursue a ‘women-friendly’ policy agenda when women mayors can appeal to other local politicians of their gender. For each of those characteristics, we divide our sample into two sub-samples using the threshold of median value across the country.⁴

Finally, we tested the heterogeneity of treatment effects depending on the age of the mayor (4), setting the threshold between younger and older mayors at the age of 45 years. We assumed that the effect of electing a female mayor may be more pronounced amongst younger mayors, as women in this group are more likely to have small children. We set the threshold at the age of 45 years. The DiD estimates are reported in the Appendix (Tables A3, A4, A5, A6).

We were not able to study heterogeneous treatment effects across various parties (left versus right or liberal versus conservative), as local elections in Poland are heavily dominated by local independent lists and national parties are still poorly present in most of the mayoral races.

Population size

Some heterogeneity of treatment effects by population size can be observed, as average treatment effects in the respective models have divergent signs. Yet, most of them have rather small magnitude. In the sub-sample of larger municipalities, there are even a few estimates of the treatment effect that are statistically significant, especially during the term 2014–2018. In this period, following the expectation that women mayors would expand local childcare, we found that the larger municipalities where a woman replaced a man as a mayor experienced a larger increase in the number of places in nurseries. The estimated average effect of electing a woman on the number of places in nurseries per 100 children aged 0–3 years is about 2.6 percentage points per year and is consistently accompanied by an increase in the current expenditures on nurseries (+129 PLN per child per year). This would suggest that the effects of the mayor's gender are more pronounced in urban contexts characterised by higher female employment rates and where egalitarian attitudes are more prevalent. Nonetheless, with respect to kindergartens, we observe mainly null effects, suggesting that newly elected female mayors did not promote the development of local childcare better. We may conclude that in general the differences in outcomes attributable to the election of a woman are slightly more pronounced amongst larger municipalities, but not consistent over time.

Financial situation

When it comes to the operating surplus per capita, it is worth noticing that municipalities both in the treated and control groups are more frequently below the country average value of this indicator. Although point estimates of the treatment effects differ, practically all of them are very close to 0. The only exception concerns expenditures on kindergartens during the term 2010–2014 amongst less affluent municipalities – this negative effect of around 198 PLN per capita significantly differs from 0 ($p < 0.1$). We did not find other systematic differences in average treatment effects between more and less affluent municipalities. Overall, this result does not support the speculation that the effects of electing a woman on local childcare services would be more pronounced amongst wealthier municipalities that have broader financial leverage to address increasing demand and develop services.

Table 4. Estimates of the supplementary differences-in-differences models: binary outcomes with covariates

Outcome	Term	ATET (DiD estimate)	SE	<i>p</i> -Value	<i>N</i> control	<i>N</i> treated	Granger test (PTA)	
							<i>F</i>	<i>p</i> -Value
<i>Nurseries – Binary</i>	2010–14	0.028	(0.024)	0.255	521	83	2.19	0.113
	2014–18	0.006	(0.029)	0.821	642	112	0.85	0.467
	2018–22	–0.012	(0.035)	0.730	566	114	0.81	0.491
<i>Expenditures on nurseries – Binary</i>	2010–14	–0.006	(0.024)	0.808	530	84	0.67	0.511
	2014–18	–0.010	(0.029)	0.743	641	112	1.38	0.248
	2018–22	0.001	(0.034)	0.969	561	115	0.60	0.615

Notes: Robust standard errors, clustered by municipalities.

Share of female councillors

We found only null effects in the sub-sample of municipalities with a share of female councillors above the country median. Amongst the municipalities that are below the country median concerning the presence of female councillors, we find predominantly negative treatment effects, two of them statistically significant at the conventional 95 percent level – pertaining to the expenditures on kindergartens in terms of 2010–2014 and 2018–2022. This result suggests that there is an interaction between the presence of women amongst top executives and within the broader local political elite: female mayors replacing men in a male-dominated local political context were even less inclined to develop local childcare services than newly elected male mayors. This finding is generally in line with the ‘critical mass’ argument, stating that sufficient descriptive representation enables substantive representation. Yet it also suggests that with a heavy gender imbalance in local councils, female executives were even counterproductive in promoting women-friendly policy agendas.

Age of mayor

We also find predominantly null effects in the sub-samples distinguishing younger and older mayors. Interestingly, the only positive treatment effects were found amongst municipalities with mayors older than 45 years. Yet contrary to our baseline hypothesis, in the sub-sample of municipalities with younger mayors, we find mostly negative effects, some of them statistically significant at the conventional level. It concerns, for example, expenditures on kindergartens during the term 2018–2022, which suggests that newly elected male mayors were investing more in the development of kindergartens in this term. This result does not support the speculation that the effects of electing a woman on the provision of local childcare services would be more pronounced in the sub-sample of municipalities led by younger mayors.

Estimations using the generalised synthetic control method (GSC)

Table 5 presents the results of an alternative estimation of the treatment effects (i.e. effects of electing a woman), using the generalised synthetic control method (Xu, 2017). The supplementing graphical analysis is included in the Appendix (Figs. A1, A2, A3, and A4). All estimates obtained with the use of the matrix completion method (Athey et al., 2021) come with relatively high *p*-values (none of the coefficients exceeded a commonly used 5% threshold). Thus, we can conclude that GSC null results are also, to a huge extent, in line with the baseline DiD analyses.

Conclusions

In this study, we verified whether the change of the local leader from a man to a woman brings a systematic policy change. We focussed on childcare in Polish municipalities for three main reasons. Firstly, the extant research shows that the availability of childcare services is strategically important for women’s position in the labour market, even in modernised societies, and improves gender equality.

Secondly, local authorities in Poland, for the last two decades, the period under study in this paper, have been in a very good position to bring about substantial change in this area, initially underdeveloped and characterised by relatively poor coverage. Local authorities in Poland have considerable discretion over this service and can use different instruments to support the development of childcare services, both public and private. Thirdly, the strong mayor system, sometimes labelled as 'local presidentialism' puts local leaders in a position that allows them to influence local policies, even without the firm support of the council.

Using quasi-experimental research designs, which allow us to limit the influence of confounding variables, compromising the quality of typical cross-sectional analyses, we can better pinpoint the causal effect of electing a female mayor on four different indicators measured over the timespan of 16 years. We found predominantly null effects on local childcare availability (measured by the enrolment in nurseries and kindergartens), as well as current spending on childcare facilities. These effects are robust to various specifications. Treatment effects are also indistinguishable from zero at the conventional levels of statistical significance for most of the sub-samples defined by the theoretically relevant covariates: the size of the municipal population, financial condition of the municipality, share of women amongst councillors and mayors' age. Amongst the few statistically significant treatment effects identified in the supplementary analyses of treatment heterogeneity, the negative effects of electing a woman even outnumbered the positive effects.

The results of this study bring new empirical evidence to the theoretical debate regarding political representation, more precisely, the 'descriptive-substantive link' (Pitkin, 1967, p.63). One of the principal hypotheses regarding political representation holds that the change in descriptive representation, that is, the increase of a certain socio-demographic category amongst the decision-makers, leads to changes in policy responsiveness and a substantial policy change (Schwindt-Bayer & Mishler, 2005, p.413). It seems that in the particular context analysed in this paper, the policy change occurred at the local level, yet the intense development of childcare services at the local level was fostered both by men and women holding mayoral positions. We find no systematic evidence that women holding mayoral positions in Poland expanded (or, at least started expanding during their term) local childcare services more than their male counterparts.

One of the plausible interpretations of this null finding, requiring future research amongst individual policymakers, is that male and female representatives shared policy priorities. In particular, policy priorities that do not provoke controversies and are promoted by the national government may proliferate quickly amongst local elites. Another interpretation could refer to the fact that women are still a relatively narrow minority amongst mayors in Poland. As women in politics are highly visible and under higher performance pressure, they potentially conform to a dominant model of local leadership, prioritising stereotypically masculine policy domains, such as infrastructure and development (Huddy & Terkildsen, 1993). Finally, it is possible that the systematic differences in childcare provision appear only after a longer period, exceeding a single term of office (in this study, the data limitations did not allow us to study the long-term causal effects of electing a woman).

Table 5. Estimates of the supplementary GSC models

Outcome variable	Term	ATET	SE	<i>p</i> -Value	<i>N</i> control	<i>N</i> treated
<i>Children in kindergartens</i>	2010–2014	0.2984	1.088	0.7839	530	84
	2014–2018	−0.3142	0.7607	0.6796	645	113
	2018–2022	0.5789	0.7124	0.4164	568	115
<i>Children in nurseries</i>	2010–2014	0.2512	0.3852	0.5144	521	83
	2014–2018	0.6468	0.5134	0.2077	642	112
	2018–2022	−0.4083	0.6873	0.5525	566	114
<i>Kindergartens – Expenditures per child</i>	2010–2014	−161.12	95.48	0.0915	530	84
	2014–2018	75.83	80.70	0.3474	645	113
	2018–2022	−169.08	96.88	0.0810	568	115
<i>Nurseries – Expenditures per child</i>	2010–2014	21.44	20.33	0.2916	530	84
	2014–2018	29.08	34.82	0.4037	641	112
	2018–2022	−32.39	55.98	0.5629	561	115

Notes: Estimation method: the generalised synthetic control with matrix completion. Inference: nonparametric bootstrap. Cross-validation was employed to select the regularisation parameter (*lambda*) in the matrix completion algorithm. This parameter balances the model's ability to fit observed data with its capacity to estimate missing entries (which can be viewed as counterfactual outcomes). The regularisation helps control the model's complexity, improving its reliability in predicting the unobserved counterfactuals.

This conclusion does not mean that the changes favourable to women's interests do not require women as decision-makers. On the contrary, the evidence presented in the supplementary analyses tentatively suggests the importance of female representation in the municipal councils, as the poorer presence of women amongst local councillors appeared to be a condition in which women mayors developed childcare services even less intensively than men. On top of that, one should not neglect the role of upper-level politicians and activists of civil society organisations, who promote policies contributing to gender equality and who are frequently behind the construction of adequate incentives for local authorities to do the same in their communities.

Supplementary material. For supplementary material accompanying this paper visit <https://doi.org/10.1017/S0047279425000121>

Data availability statement. The data are available on request from the corresponding author.

Acknowledgments. This research was supported by the National Science Center (Narodowe Centrum Nauki) under the grant Opus no. 2021/43/B/HS5/01059. The authors acknowledge the support of Sylwia Waruszewska and Tomasz Żółtak.

Competing interests. The authors declare none.

Notes

1 A disruption visible in the time series requires an additional comment. In 2015, after an education reform lowering the mandatory school age from 7 years to 6 years, the number of children in kindergartens dropped, as they started primary school. However, the reform was quickly reverted in 2016 by the Szydło cabinet formed by PiS (*Prawo i Sprawiedliwość*, Law and Justice).

2 Sometimes researchers analyze the relative allocation of expenditures (as percentage of all expenditures; see, for example, Profeta 2020). In our case, these indicators are highly correlated at the municipal level (depending on the year, Pearson's r varies between 0.78 and 0.89 in the case of expenditures for kindergartens, and 0.86 and 0.98 for nurseries).

3 We exclude cases in which the outcome variable increased from zero to a positive value and in the next year fell again to zero. This procedure is applied separately for each outcome variable and each 4-year term.

4 For population size and operating surplus we do this on the basis of the median values for the municipality in the particular 4-year term, while for the share of female councillors we take the values from the first year following local elections. Additionally, for the share of female councillors, we decided to exclude municipalities with values exactly equal to the median, as they make up approximately 10–15 per cent of the whole sample.

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Cite this article: Gendźwiłł, A., Kroszka, J., Łukomska, J., and Pierzgalski, M. (2025) Female mayors do not lead to greater childcare provision – Evidence from Polish municipalities. *Journal of Social Policy* 1–23. <https://doi.org/10.1017/S0047279425000121>