

ENHANCING LOCAL-LEVEL DEMOCRATIC PROCESSES WITHIN A HYBRID REGIME: INSIGHTS INTO PARTICIPATORY BUDGETING FROM JÓZSEFVÁROS, BUDAPEST

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ABSTRACT: *Our study describes a rigorous evaluation of the participatory budgeting (PB) initiative in Józsefváros, Budapest, for the years 2022 and 2023, examining its capacity to enhance democratic mechanisms within a semi-autocratic, hybrid regime. We contextualize PB in the broader landscape of participatory democracy, drawing parallels between global practices and Hungary-specific dynamics. Utilizing a comprehensive comparative methodology, we explore three critical dimensions: the evolution of participation, the trajectories of ideation, and patterns in voter behavior. Our findings reveal measurable growth in Józsefváros's PB across these domains, noting increased participant engagement, voter turnout, and idea diversity. This underscores the potential for enhancing democratic participation even in illiberal regimes. Nonetheless, the impact of this emerging initiative remains concentrated within a specific subset of the Józsefváros populace, highlighting the imperative of deploying broader and more inclusive strategies to ensure its sustainability.*

KEYWORDS: *participatory budgeting, comparative research, participatory democracy, hybrid regime*

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INTRODUCTION

Local democratic processes are essential cornerstones of democratic societies (Bródy 2023). Grounded in the principles of participatory democracy,² participatory budgeting (PB) enables local residents and stakeholders to directly influence the allocation of a portion of public funds (Ganuza–Baiocchi 2012; Wampler 2010) and facilitates the enhancement of the democratic processes. Our study examines the participatory budgeting process within Budapest's Józsefváros³ district, analyzing comparative data spanning 2022 and 2023. Our research question explores the effect of PB in Józsefváros on enhancing local democratic mechanisms. This inquiry delves into short-term variations in crucial metrics, including civic participation, inclusivity, and overall engagement, alongside assessing the diversity in proposed ideas and voter demographics. This approach not only broadens the scope of short-term analyses found in current literature but also illuminates the capacity of participatory democracy tools to fortify democratic practices amidst the strengthening autocratic tendencies observed in Hungary.

Characterized by the degradation of democratic principles and a rise in authoritarian tendencies, Hungary's current political environment has subjected local democracy to severe challenges (Fleck et al. 2022). The societal and economic constriction observed from the 2010s onwards not only illustrates a decline in participatory initiatives and active citizenship (Ágh 2012) but also reflects a shift in the national economy towards a centralized, semi-autocratic, state-affirmed, hybrid model (Musacchio 2014). Moreover, the intensification of socio-economic power and rigid state centralization have ostensibly sidelined democratic processes in Hungary (Scheppele 2022; Fleck et al. 2022). The sparse inclusion of participatory elements within educational frameworks also obstructs citizen acclimation to participatory methodologies, thereby inhibiting participation in 'communicative actions' (Habermas 1991). Post-2010 transformations in Hungary's social institutions have fostered centralized structures that entwine citizen initiatives within bureaucratic constraints (Jelinek 2020). Additionally, despite a detailed local government system, recent legislation has seemingly centralized power and eroded local government

2 Participatory democracy encourages direct self-governance, tackling the issues of marginalization and limited citizen input seen in representative democracies of Western Europe (Pateman 2012; McCoy–Rahman 2016). This framework motivates citizens to become proactive stakeholders, nurturing dialogue and group deliberation to foster inclusive and astute decision-making processes, transcending mere interest representation (Gutmann–Thompson 2009; Landmore 2017).

3 Józsefváros, one of Budapest's 23 districts, maintains an independent local municipality from a public administration perspective.

autonomy (Böröcz 2014). Furthermore, continuous state funding withdrawals since 2019 have initiated a decline in pluralistic decision-making and eroded local democratic processes (Begadze 2022), while political partisanship appears to have overshadowed merit in local government appointments, potentially thwarting effective policy implementation (Szelényi–Csillag 2015).

Nonetheless, participatory budgeting has seen a revival among Hungarian opposition party municipalities in the 2020s, notwithstanding the pervasive void of substantive participatory experiences post-regime shift, underscored by municipalities transmuting into metaphorical ‘empty spaces’ (Valuch 2014).

Initiated in Porto Alegre, Brazil, in 1989, participatory budgeting aims to democratize decisions and ensure equitable resource distribution to marginalized communities (Abers 1998). Bolstered by transparency and active civil society, it has been widely adopted (Wampler 2010; Sintomer et al. 2012). While PB centers on participatory frameworks, studies reveal diverse participation quality, fluctuating between genuine empowerment and mere tokenism (Ganuza–Baiocchi 2012; Cabannes 2004). Its profound influence on local governance solidifies its academic importance. Longitudinal research, such as Avritzer’s (2006) in Porto Alegre, underscores PB’s lasting impact on public services and urban advancement (Makowski 2019). Short-term studies illuminate PB’s role in shaping urban layouts and elevating living standards (Sintomer et al. 2008; Cabannes 2004; Bernaciak et al. 2018). However, some literature questions PB’s efficacy, suggesting its symbolic role in governance (Makowski 2019) or its dominance by select innovators, which leads to sidelining broader community engagement (Tomashevska et al. 2023; Baranowski 2019). Ganuza and Baiocchi (2012) posit that PB’s longevity does not always imply transformative change, echoed by Goldfrank (2012), who argues that prolonged PB may not guarantee notable shifts in governance or policy reforms.

In summary, participatory budgeting, rooted in democratic and fiscal governance, serves as a lens for exploring the evolution of local democracy. By examining its progression longitudinally, we gain insight into its resilience and impact on governance and equity. Our study delves into the transformations within Budapest’s Józsefváros, where national policies starkly contrast with the PB methodology. We will further detail the 2023 Participatory Budgeting in Józsefváros using quantitative approaches, comparing it with 2022 data to create a comprehensive understanding of its progression amid strengthening authoritarian tendencies. Given the scarcity of short-term research on PB in Hungary, our study provides a comparative analysis within a complex socio-political context while also shedding light on the dynamic effects of PB initiatives.

PARTICIPATORY BUDGETING IN JÓZSEFVÁROS

Democracy in Hungary, which emerged in the early 1990s, marked a transition from a state-socialist system to a democratic market approach. Although initial efforts were not explicitly termed ‘participatory democracy,’ they signified a move towards local self-governance. This shift was supported by financial education and sustainable social development, paving the way for participative budgeting. However, after 2010, a rise in centralization curtailed the effectiveness of local governments and impeded the cultivation of active local citizenship. Starting with Kispest (District XIX) in 2017, many Hungarian cities, including Budapest, began participatory budgeting experiments. These initiatives soon expanded to other Budapest districts (I, III, VII, VIII, IX, XIII, XIX, XX), drawing inspiration from successful models in Latin America and Western Europe (Madarász–Nizák 2023).

Table 1. Participatory budgeting across districts of Budapest and settlements in Hungary

PB locations	Inhabitants of the district/ Settlement (n)	Start of the PB	Amount allocated for PB (HUF [EUR])	Share of PB/total expenses of municipality (%)
Budapest	1,671,004	2022	1000 million [~2,620,000]	0.245
Budapest, District I	24,277	2022	20 million [~52,000]	0.129
Budapest, District III	126,478	2019	100 million [~262,000]	0.211
Budapest, District VII	49,323	2020	100 million [~262,000]	0.529
Budapest, District VIII	57,451	2022	150 million [~393,000]	0.408
Budapest, District IX	144,491	2022	10 million [~26,000]	0.053
Budapest, District XIII	117,792	2022	60 million [~157,000]	0.189
Budapest, District XIX	56,561	2017	60 million [~157,000]	0.345
Budapest, District XX	61,766	2023	23 million [~60,000]	0.120
Szentendre	25,963	2021	100 million [~262,000]	0.932
Gyöngyös	28,164	2021	8 million [~21,000]	0.060
Kozármislény	6,675	2021	5 million [~13,000]	0.259

Source: The data presented is derived from the author's compilation based on information sourced from the official websites of the district municipalities.

Table 1 offers a detailed comparative snapshot of PB initiatives within Hungarian districts and settlements. The data underscores the striking variation in the proportion of PB relative to total municipal expenses, indicating a diverse emphasis on PB across the regions. Notably, Szentendre dedicated a considerable 0.932% of its total expenses to PB, which starkly contrasts with the mere 0.053% allocated by District IX in Budapest. However, it may be observed that all municipalities allocate less than 1% of their annual budgets to the PB process. Additionally, there appears to be no direct correlation between the amounts allocated for PB and the population size of the districts; for example, Budapest, despite its large population, commits a relatively modest percentage of its budget to PB, whereas smaller localities such as Szentendre allocate a substantially larger percentage. The table further highlights the growing proclivity⁴ to embrace PB, with most districts launching their PB initiatives between 2019 and 2023. The observed trend indicates that the decision-making process for PB allocations is intricate and involves multiple layers. The primary objective was to strengthen democratic practices, increase transparency, and ensure that budgetary decisions reflect the community's needs. This strategy has catalyzed various community initiatives, ranging from infrastructure upgrades to social programs, thus reinforcing local democratic values, enhancing transparency (Zeisler 2022), narrowing the gap between citizens and government authorities (Oross 2020), and building mutual trust (Merényi 2020). Participatory budgeting, though increasingly adopted in Hungary, confronts challenges generated by both macro-sociopolitical forces and local intricacies. The incongruity between PB's democratic ethos and Hungary's post-2010 centralizing and financial divestment from local governments hampers the achievement of its empowering goals (Scheiring 2019; Oross 2020). At a more granular level, challenges include restricted PB funds, potential monopolization by dominant factions, and bureaucratic impediments, occasionally silencing minority perspectives (Merényi 2020; Zeisler 2022).

Józsefváros's PB, part of Hungary's variable implementation, operates within a representative democratic context, creating unique challenges (Gosztonyi 2022). Initiated in 2019 under the mayor's program and due to his office's collective effort, its rollout faced challenges on multiple fronts. Orchestrated by the Community Participation Office, the plan, supported by the mayor, contended with the need to reconcile participatory ideals with entrenched bureaucracy. This complexity was amplified by Hungary's centralizing tendencies since 2010, particularly the centralization of some local revenues. Planning was further strained by the

4 It's noteworthy to observe that municipalities, which are generally in opposition to the FIDESZ governing party, are the ones primarily implementing participatory budgeting.

2019 COVID-19 pandemic. Despite fiscal pressures preventing the 150-million-HUF⁵ program's immediate start, by spring 2020, a proposal package was ready. Though initially deferred due to budgetary constraints, dedication to PB ensured its acceptance in 2021 and its launch in Józsefváros in 2022.

The PB in Józsefváros, implemented in 2022 and 2023, followed a 'classic' PB process. Initially, local decision-makers committed to PB and allocated specific resources. Subsequently, open district-wide and thematic discussions facilitated collective problem identification, culminating in a proposal submission stage. Thereafter, a resident working group judiciously chose ideas for a public ballot. The successful initiatives were executed by the local government, and the process was repeated annually.

The implementation of PB in Hungary, particularly in Józsefváros, showcases the initiative's capacity to democratize financial processes and stimulate community advancement in the face of obstacles. The short-term analysis of programmatic changes is crucial for understanding and maximizing PB's potential impact on local governance within a centralized state-capitalist framework.

HYPOTHESIS

Centered on Józsefváros's PB, our study explores short-term key metric disparities and their influence in bolstering democratic processes through enhanced civic participation and joint problem-solving. Participatory mechanisms in PB, such as public consultations, citizen assemblies, submitting ideas, and voting, foster citizen involvement and transparency and help hold local governments accountable (Bródy 2023). However, some scholars express reservations about PB's inclusivity, suggesting it predominantly attracts active citizens, potentially excluding marginalized groups (Király et al. 2016). Our evaluations will measure the expansion of participation and engagement (Wampler 2010; Sintomer et al. 2012; Avritzer 2006; Makowski, 2019), Dynamics of Submitted Ideas (Sintomer et al. 2008; Cabannes 2004; Bernaciak et al. 2018; Bartocci et al. 2023), while simultaneously analyzing characteristics of voter engagement. Our research aims to evaluate the capability of PB to broaden

5 The 2022 and 2023 PB initiatives were implemented with a fund of 155.5 million HUF, of which 150 million HUF (~380.000 EUR) was distributed based on the votes of the local residents. Consequently, a modest sum of 5.5 million HUF (~14.230 EUR) was allocated for the entire program, constraining the seamless execution of the participatory budgeting process in Józsefváros.

the diminishing democratic arena within Józsefváros. This study concentrates on examining the short-term impact of PB on reinforcing local democratic frameworks, leading to the development of the following hypotheses:

H₁: Expansion of participation and engagement: We hypothesize that there was a significant increase in overall participation in Józsefváros's participatory budgeting program from 2022 to 2023, with particular emphasis on the consistency of engagement among various demographic groups.

This hypothesis is designed to help assess the scope of community involvement and the sustained engagement of diverse demographic sectors over the specified period.

This inquiry associated with H₁ seeks to understand the capacity of participatory budgeting to engage different community segments consistently over time, reflecting on the essential role of civic participation in strengthening democratic processes. The foundational work of Wampler (2010) and Sintomer et al. (2012) underscores the critical importance of involving a wide spectrum of the community in participatory budgeting efforts to enhance democratic engagement and processes.

H₂: Dynamics of submitted ideas: Our hypothesis anticipates a dynamic shift in both the volume and thematic nature of ideas submitted to Józsefváros's participatory budgeting initiative.

This hypothesis seeks to explore how the participatory budgeting process is responsive to evolving community needs and priorities, as evidenced by the diversity and transformation of the ideas it produces.

The focus of H₂ is to assess the participatory budgeting process's adaptability and responsiveness to the community's shifting demands and interests. The studies by Sintomer et al. (2008) and Cabannes (2004) underscore the significance of thematic diversity and the progression of submitted ideas in participatory budgeting, highlighting its role in mirroring community engagement and adaptability. This aspect of the hypothesis aims to reveal the extent to which participatory budgeting can serve as a platform for innovative problem-solving and inclusive community development.

H₃: Characteristics of voter engagement: Our hypothesis suggests the stability in the demographic profiles of voters (including age, gender, and residence location) and their patterns of participation in voting within Józsefváros's participatory budgeting from 2022 to 2023.

This hypothesis aims to help scrutinize the participatory budgeting process in terms of its inclusivity and capacity to attract and engage a diverse cross-section of the community. By analyzing variations or stability in voter demographics and participation trends, H₃ seeks to address concerns regarding the accessibility of participatory budgeting and its potential to reach beyond the circle of already active citizens to include marginalized or less active groups. Research by Király et al. (2016) highlights these concerns, emphasizing the need for participatory budgeting processes to be genuinely inclusive, enabling the engagement of a broad spectrum of the community. The investigation associated with H₃ will provide insights into the effectiveness of participatory budgeting in fostering an inclusive democratic environment that encourages wide-ranging community participation.

These hypotheses help delve into the nuances of participation shifts, demographic impacts, and changes in the patterns of idea submission and voter demographics, leading to a comprehensive examination of Józsefváros's participatory budgeting initiative. Through an exploration of the dynamics that have influenced Józsefváros's PB over two years, we aim to evaluate its concrete effects on democratic engagement and collaborative problem-solving. This analysis seeks to shed light on the role of PB in fortifying democratic practices and offers insights into its applicability and potential benefits within semi-authoritarian socio-political environments. By increasing understanding of these aspects, our study contributes to the broader discourse on enhancing democratic processes through participatory mechanisms, highlighting the transformative potential of PB in diverse governance contexts.

DATA AND METHODOLOGY

In our focused investigation on participatory budgeting spanning 2022 and 2023, we synthesized data from three databases to highlight notable changes and trends. Initially, comprehensive PB-related statistics were extracted from an aggregated database encompassing all registered users and voters, offering a detailed quantitative analysis of participants, voters, and idea contributors involved in the PB initiatives throughout the observed period. This database served as a foundational source for a robust representation of engagement and participation metrics. A notable challenge in our analysis was identifying duplicate registrations (where individuals may have registered multiple times across different devices). To counteract this issue, we applied duplication filters based on criteria such as address, house number, and age, ensuring a

more accurate dataset. Despite encountering variables with varying degrees of missing data, all proportions of missing data remained below the 5% threshold, maintaining the integrity of our dataset. To manage these gaps, we utilized a Bayesian network-based algorithm for imputation (Ye et al. 2020), selected for its efficacy in handling datasets with a finite number of elements.

A significant portion of our data also originated from user activities on reszvetel.jozsefvaros.hu, a platform that enabled the digital submission of ideas over a two-year timeframe. The reszvetel.jozsefvaros.hu platform was instrumental in generating comprehensive reports on the ideas that were submitted, which were aggregated through web scraping. This method allowed for the efficient collection of structured online data, making it suitable for our analysis.

Furthermore, to help develop a comparative perspective, we utilized a probabilistic method to estimate the number of residents eligible to vote across various neighborhoods and districts. This approach provided insights into the PB process's reach and its relative impact on the resident population, enabling us to gauge the extent of community involvement and participation more accurately⁶.

Given the two-time-point nature of our dataset, traditional time series analyses (ARIMA, VARIMA) were deemed unsuitable due to their requirement for multiple data points for accurate parameter estimation and reliable forecasting (Thelin et al. 2020; Boyd et al. 2019). To extract the utmost insight from our dataset for each year of analysis, we utilized descriptive, comparative, and logistic regression statistical techniques. We used the *R* programming ecosystem (version 4.2.2) supplemented with *RStudio* (version 2023.06.1+524) to undertake these computations (R Core Team 2022), and the GIS-based analyses were created with the *QGIS 3.22 program* (QGIS 2023).

In summary, our short-term research used a multifaceted approach, integrating data from multiple sources and employing varied methodologies to ascertain and illuminate pivotal changes. Given the dataset's temporal constraints, we bypassed traditional time series analysis in favor of a multifaceted approach that integrates descriptive statistics, comparative analysis, and logistic regression. This strategy, merging demographic and spatial data, enabled the refined segmentation of voter groups.

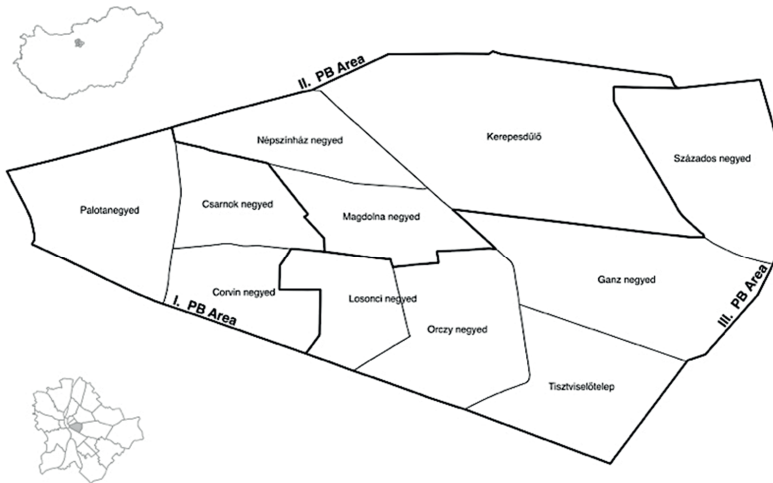
⁶ The first two datasets used in this study were collected and provided by the Józsefváros Municipality as part of a research collaboration with the author. The third dataset was independently developed by the author, drawing on data supplied by the Józsefváros Municipality.

RESULTS

Expansion of participation and engagement

In assessing the strengthening of local democracy, participant composition is crucial. During the 2022–2023 participatory budgeting, the district of Józsefváros was divided into three PB areas aligned with the boundaries of the district’s quarters. These areas, while diverse in socio-economic terms, were designed to minimize district polarization (Map 1).

Map 1. Areas and quarters allocation in Józsefváros PB in 2022 and 2023



Source: Author's compilation

Upon georeferencing the locations of both online and offline registered participants, we undertook a spatial analysis of their distribution using Kernel density estimation (Okabe et al. 2009), as illustrated in Map 2.

Kernel density maps from 2022 and 2023 indicate widespread participation across the whole district, albeit at varying intensities. Registrations rose from 680 in 2022 to 1,675 in 2023, marking a 1.463-fold increase. However, even with this growth, participation in 2023 was nascent and turnout modest. Of the 57,451 eligible Józsefváros voters,⁷ 1.18% were engaged in 2022 and 2.6% in 2023.

⁷ In the *Appendix* Map A1 presents a detailed geographic visualization of the total number of eligible voters segmented by quarters within Józsefváros.

While the PB also accommodated those working or studying in the district, suggesting a voter base larger than 57,000, actual participation hovered around 1% in 2022 and 2% in 2023. The primary participation indicator suggests that participation has expanded with the influence of PB, albeit marginally.

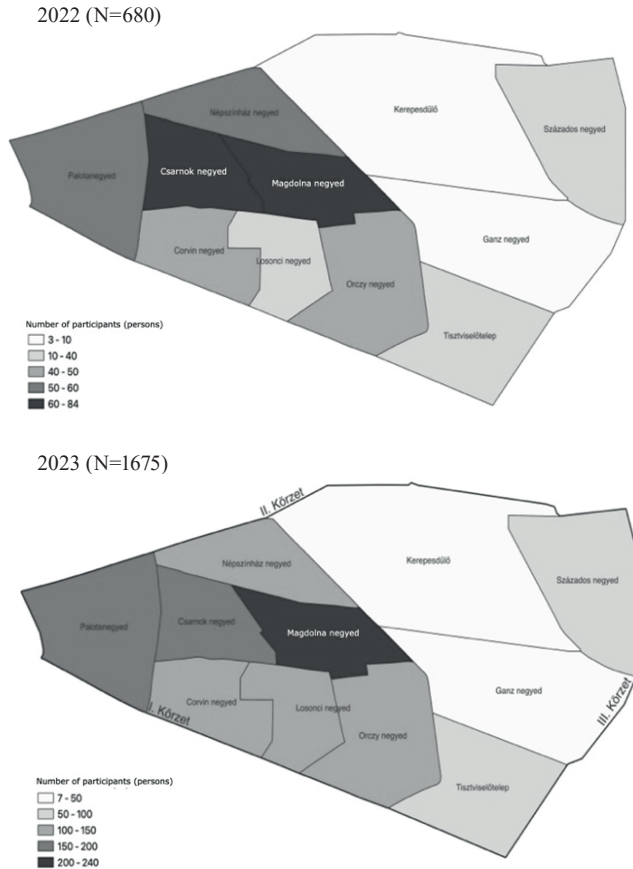
Map 2. Spatial distribution of PB participants in 2022 and 2023 based on Kernel density
2022 (N=680)



Source: Author's compilation

Participant distribution by quarter, as depicted in Map 3, shows that every district was represented in the PB in both 2022 and 2023.

Map 3. Distribution of participants by quarter in 2022 and 2023



Source: Author's compilation

Analysis shows notable participant polarization by quarter in both years. Western and central quarters consistently had three to four times the participation of eastern quarters.⁸ In 2022, eastern quarters averaged 9 participants (SD: ± 6), increasing to 47 in 2023 with a significant SD (± 32). In contrast, western and

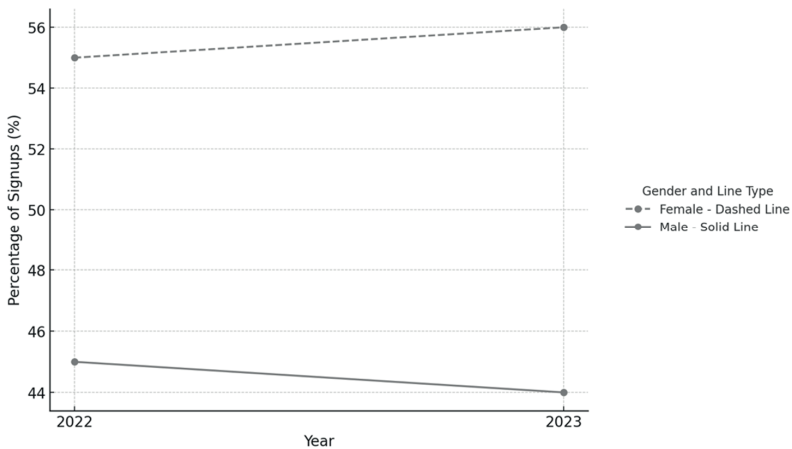
⁸ Expectedly, eastern quarters reported modest participation due to their limited residential populace. They are largely occupied by the Fiumei Road Cemetery, and the Ganz Industrial quarter mainly hosts the Chinese Market.

central quarters had an average of 59 participants in 2022 (SD: ±19) and 153 in 2023 (SD: ±50). While overall participation doubled from 2022 to 2023, the disparity between the district’s east and west remained. The east–west division probably arose from the program implementers’ increased emphasis on engaging residents in the western and central districts.

Our data for a comprehensive analysis of participants is limited. Beyond spatial location, our insights rely primarily on two variables: gender and age. Figure 1 illustrates the shift in the gender distribution of participants over the two-year period.

Figure 1 shows a modest 3% gender shift in PB participation across two years, maintaining a nearly balanced gender distribution. Both years saw a slight female majority, with ratios close to 55% female to 45% male. The average participant’s age increased from 41 in 2022 to 42 in 2023. Despite large standard deviations, participant ages ranged from 17–84 in 2022 and 16–91 in 2023, suggesting diverse engagement across ages. Notably, the majority were from Generation Y, typically in their 40s. The program’s appeal to Generation Y can be attributed to the district’s gentrification. This process brought about a significant influx of new residents, predominantly from Generation Y. These newcomers, characterized by higher educational attainment, exhibit greater civic participation, likely owing to their recent mobility and inclination to engage as active citizens.

Figure 1. Gender distribution of participants in 2022 and 2023



Source: Author’s compilation

A pivotal question concerns the program's ability to retain participants across consecutive years. Name-matching⁹ indicates that 23.8% of the online participants in 2023 also engaged in the Józsefváros participation budget in 2022 – notable retention. Given that participation had nearly tripled by 2023, this suggests that 44.8% of the 2022 cohort returned the following year. Thus, roughly half of all initial participants remained actively involved, underscoring the program's compelling retention capacity.

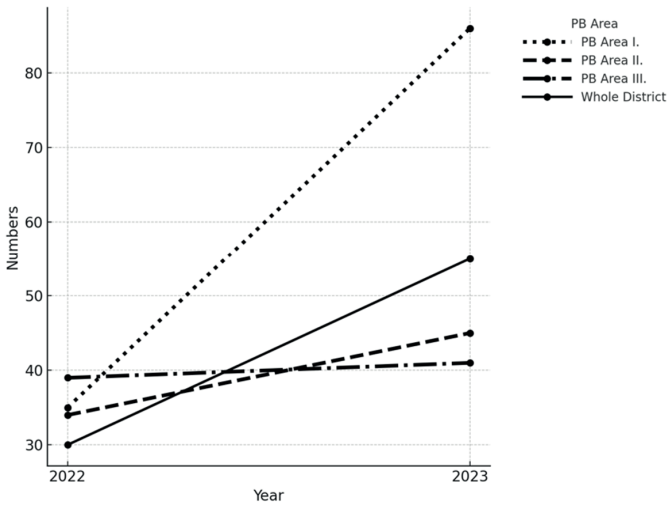
The primary participation indicators suggest that while the program expanded participation in the district, overall participation rates remained modest. Predominantly, the program engaged Generation Y – highly educated, recent arrivals – with a marginal female majority. Notably, the program exhibited strong retention, with nearly 50% of participants returning the subsequent year.

Variability in submitted ideas: PB ideas and idea contributors

In analyzing ideational contributions, we documented 137 idea submissions in PB 2022 and 228 in 2023, marking a 66.4% increase from the initial year. To fully understand this upsurge, it is crucial to break down the data by specific PB areas, as depicted in Figure 2.

⁹ To assess participant overlap between 2022 and 2023, we attempted to align both years' databases, but without a direct linking variable. We utilized names of online registrants, considering them more reliable than addresses, as buildings can contain multiple apartments. This approach might underestimate overlap due to typos, abbreviations, and offline registrations but provides a foundational reference for analysis.

Figure 2. Change in the numbers of ideas in 2022 and 2023 by PB area ($N_{2022}=137$, $N_{2023}=228$)



Source: Author's compilation

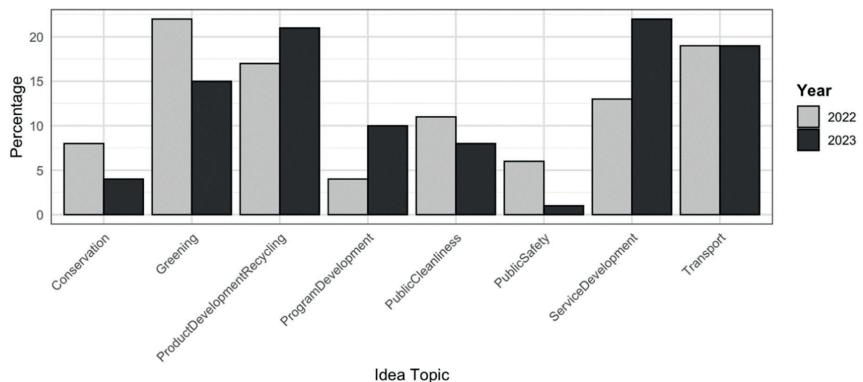
Figure 2 shows that in 2022, each of the three PB areas contributed around 30 ideas. In 2023, Area I's submissions increased by 83.33%, Area II's by 36.36%, and Area III's by 7.69%. Whole district idea submissions also surged by 145.71%, resulting in an average growth of 42.46%.

Why the rise in idea submissions? The uptick in submissions in 2023 can be partially attributed to more residents providing multiple ideas than the previous year. Specifically, one person submitted multiple ideas in 47 instances (37.9% of total submissions) in 2023, compared to 23 times (25% of total submissions) in 2022. The average ideas per contributor were 1.4 in 2022 and 1.8 in 2023. This increase is statistically significant, with a *t-test* value of 2.2026 and a *p-value* of 0.048. Besides the rise in multi-submission contributors, there was a significant surge in individual idea submissions as well, with the count escalating from 92 in 2022 to 124 in 2023.

In summary, the number of idea submissions increased markedly over the two years. The proportion of submitters providing multiple ideas rose by 0.4 percentage points from 2022 to 2023. Additionally, the total number of individual submitters increased. Both these factors contributed to the significant surge in idea submissions.

Examining the overlap and defining characteristics of contributors across two waves is vital. While our database provides limited variables for an in-depth analysis, the growing number of idea contributors suggests partial overlap. Notably, gender distribution remained consistent across years, with a female-to-male contributor ratio of around 70–30%. By 2023, male contributors had decreased marginally from 30% to 26%. Utilizing name-matching, only a 10-name overlap was found between the 2022 and 2023 idea contributors. Consequently, 91.94% of the 2023 contributors were newcomers. The average age of contributors was 42.3 in 2022 and 44.05 in 2023, each with a standard deviation of ± 14.5 . To summarize, both years predominantly featured female and Generation Y contributors, and approximately 90% of the 2023 participants were novel to the program.

Figure 3. Distribution of ideas by topic in 2022 and 2023 ($N_{2022}=137$, $N_{2023}=228$)



Source: Author's compilation

Figure 3 highlights the change in ideational categories from 2022 to 2023. In 2022, green initiatives represented 21.9%, declining to 15% in 2023, with ideas like micro-parks and expanded greenery. Transportation remained a key theme, making up 18.9% and 19% for 2022 and 2023, respectively, encompassing proposals for parking, traffic transformations, and cyclist-friendly initiatives. In 2022, 16.7% of submissions were related to local government product development, including cafes and co-working spaces. This category expanded to 21% in 2023. The local government service development category saw a significant rise from 13.1% in 2022 to 22% in 2023, suggesting varied proposals such as specialist advocates for individuals with disabilities and local tourism apps. Conversely, public cleanliness submissions waned in 2023, and ideas

involving public safety were almost absent. Interestingly, submissions related to local government program development jumped from 3.6% in 2022 to 10% in 2023, including innovative suggestions like outdoor DJ booths and community fairs.

To determine the statistical significance of the observed differences in topic scores between the years 2022 and 2023, we conducted a permutation test. This involved shuffling the years for each topic randomly, thereby simulating potential changes in topic scores across the dataset. We replicated this shuffling process 1,000 times to construct a distribution of differences attributable to chance. Subsequently, we compared the actual change in topic percentages between 2022 and 2023 to this randomized distribution at the 95% confidence level. The results of this analysis are summarized in Table 2, which presents the actual changes alongside their respective significance thresholds.

Table 2. Results of the permutation test of submitted ideas by topic on topic score changes

Submitted Ideas by Topic	Actual Change	Significance Score
Conservation	-4	-0.734
Greening	-7	-1.290
Product development or recycling	4	0.748
Program development	6	1.120
Public cleanliness	-3	-0.549
Public safety	-5	-0.920
Service development	9	1.670
Transport	0	0.007

Source: Author's compilation

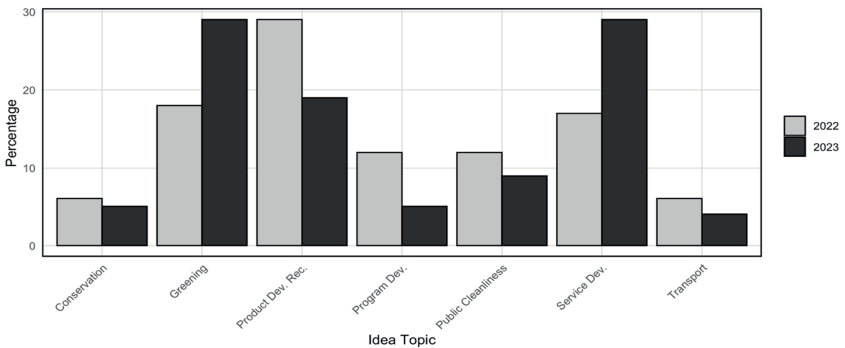
The analysis of topic percentage changes between two consecutive years, as measured by actual changes and their significance scores, reveals a nuanced landscape of shifts across various domains. Notably, service development experienced a significant increase, indicating a potential shift in societal or strategic priorities toward this area. Conversely, topics like greening and public safety saw small declines, suggesting a reallocation of focus or changing public interest. These changes, validated by statistical significance scores derived from permutation tests, suggest that certain trends are not random but reflect meaningful shifts.

In summary, by 2023, the emphasis leaned toward enhancing municipal infrastructure, diversifying services, and rolling out innovative programs. On the other hand, concerns related to cleanliness and safety saw a reduced

focus. Nonetheless, proposals centered on traffic solutions and district greening remained more or less steady, underscoring their continued importance to the community.

Regarding the ideas that won, Figure 4 elucidates residents' preferences. In 2022, product development and greening were foremost, with 29% votes, followed by municipal service development at 17% and greening at 18%. By 2023, while service and product development jointly captured 29% votes, greening remained consistent at 19%. This continued trend over the two years highlights these categories' crucial influence on the community's developmental vision.

Figure 4. Distribution of winning ideas by category between 2022 and 2023 ($N_{2022}=13$, $N_{2023}=16$)



Source: Author's compilation

To determine the statistical significance of the observed changes, we again employed a permutation test. The results of this analysis are presented in Table 3. The analysis of score variations showcases a complex picture of shifting interests across different areas among winning ideas as well. Notably, service development experienced a significant boost, suggesting a growing interest or emphasis in this domain. In contrast, public cleanliness and public safety witnessed considerable declines, pointing towards a potential shift in priorities or diminishing public concern. These changes, validated through permutation tests, indicate that the observed movements are not mere coincidences but represent significant shifts in focus or interest. From the data, it is evident that voters predominantly backed ideas related to expanding the municipality's services and those advocating for municipal investments and developments. Moreover, proposals for district greening remained a significant category in both years.

Table 3. Results of the permutation test of winning ideas by topic on topic score changes

Winning Idea by Topic	Actual Change	Significance Score
Transport	-2	-3.850
Public cleanliness	-3	-1.854
Program development	-7	-1.621
Service development	12	2.135
Product development or recycling	-10	-4.504
Greening	11	3.371

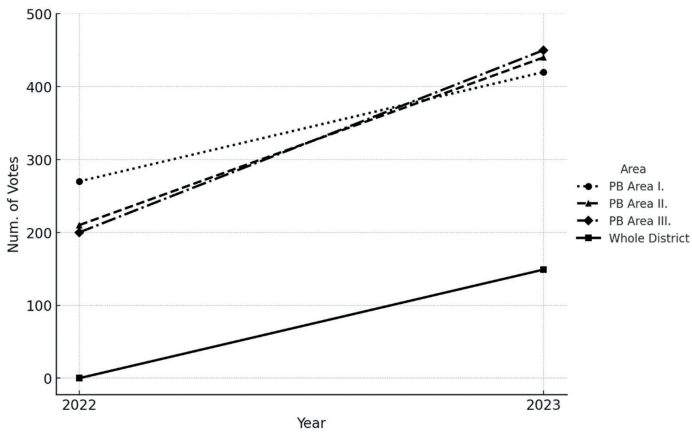
Source: Author's compilation

In conclusion, over two years, idea submissions substantially increased, with a 0.4 percentage point rise in multi-idea submitters from 2022 to 2023 and growth in the number of individual submitters. Voters chiefly supported ideas promoting municipal services, investments, and developments, with district greening persistently significant. Predominantly, contributions came from females and Generation Y, with nearly 90% of 2023's participants being new entrants.

Characteristics of voter engagement

In Józsefváros's participatory budgeting (PB), voting was paramount. Between 2022 and 2023, the number of voters more than doubled, rising from 685 voters in 2022 to 1,471 in 2023 – a 1.14-fold increase. Józsefváros's PB adopts a block-based modus operandi, enabling multi-stage engagement. Data reveals 42.3% of 2022's idea submitters voted, rising to 44.3% in 2023. However, the turnout rates of online registrants in 2022 and 2023 were only 70.6% and 72.3%, respectively. This underlines the distinct nature of the PB process, which is non-sequential and does not adhere to a linear progression of registration, idea submission, and voting. Instead, it is dynamic, allowing participants to engage at various stages of the process. In both 2022 and 2023, the average voter age hovered around 40.8 years, with a standard deviation of approximately ± 13.6 years. Gender distribution was steady across the two years, with 44.9% male and 55.1% female voters in 2022 and 41.3% male and 58.7% female voters in 2023. Online voting remained predominant, with 77% in 2022 and 79% in 2023, while vote spread across PB districts persisted, as Figure 5 depicts.

Figure 5. Change in votes for PB ideas by PB area between 2022 (N=685) and 2023 (N=1465)



Source: Author's compilation

In 2022 and 2023, each of the three districts received roughly a third of the total votes. However, 2023 saw the introduction of a new category for the entire district, which quickly gained traction, though not uniformly across districts. The marked rise in total votes and their stable distribution is linked to the voting structure, with data suggesting voters frequently utilized all available voting options.

To summarize, voter turnout doubled by 2023 while maintaining a consistent voting structure. The majority voted online and utilized all available options. Generation Y was the primary voting demographic, with balanced male and female representation.

In our analysis of Józsefváros PB voting, logistic regression was employed to enhance our understanding of voter profiles and engagement levels. Variables such as gender, PB area, age group, idea submission status, and the number of ideas submitted were analyzed to elucidate voter characteristics. These variables were subject to binary coding and min–max normalization, following the methodology of Tao et al. (2019), to ensure data compatibility. The outcomes of these logistic regression models are detailed in Table 4, highlighting key insights into voter behavior and participation trends.

Table 4. Results of the logistic regression models for 2022 and 2023

Variables	2022				2023			
	Estimate	Std. Error	z value	Pr(> z)	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	1.259	0.554	2.270	0.023*	-1.858	1.242	-1.497	0.034*
Submitted idea	-0.740	0.492	-1.504	0.007**	-1.814	0.367	-4.939	7.84e-07***
How many ideas submitted	-2.493	1.956	-1.275	0.203	2.640	1.441	1.831	0.067*
Female	-0.117	0.168	0.700	0.006**	0.107	0.132	0.810	0.418
Gen Baby Boomers	-0.198	0.519	-0.205	0.821	1.091	0.852	1.445	0.007**
GenX	-0.281	0.327	-0.858	0.391	0.543	0.206	2.635	0.008**
GenY	-0.343	0.310	1.106	2.21e-08***	1.096	0.197	5.558	2.73e-08***
GenZ	-0.110	0.380	-0.289	0.772	1.195	0.260	4.593	4.37e-06***
PB Area I	0.166	0.473	0.350	0.726	2.001	1.232	1.624	0.104
PB Area II	0.052	0.476	0.110	0.912	2.048	1.233	1.661	0.097*
PB Area III	-0.025	0.476	-0.052	0.958	2.165	1.233	1.756	0.079*

Source: Author's compilation

Notes: Significance levels: 0 '****' 0.001 '***' 0.01 '**' 0.05 '*' 0.1 '.'

The 2022 logistic regression model for Józsefváros participatory budgeting (PB) voting analysis exhibited 70% accuracy on the test set, with a precision of 0.70 for predicting voters and 0.75 for non-voters. A key insight was the negative coefficient for Submitted Idea (-1.504), indicating a smaller likelihood of voting among respondents who submitted an idea. Conversely, positive coefficients for Generation Y (GenY, 1.106) and Female (0.700) indicated that these groups were more likely to vote in 2022, while spatial factors showed no significant effect on voting behavior.

In 2023, model accuracy improved to 78%, revealing a more pronounced negative coefficient for Submitted Idea (-4.939), underscoring the consistent trend of less voting probability among idea submitters. Notably, the coefficient for the number of submitted ideas (How many ideas, 1.831) highlighted a positive impact on voter turnout, suggesting that increased idea submission was associated with greater voting engagement. The analysis also emphasized the growing importance of generational factors across all categories, with Generation Y (GenY, 5.558) leading, followed by significant participation from Generation Z (GenZ, 4.593), Generation X (GenX, 2.635), and Baby Boomers (1.445), indicating broadening demographic involvement in voting. Interestingly, by 2023, the influence of gender appeared to diminish, with

a more male-dominated voter base rendering the Female coefficient non-significant. Spatial variables also evolved, with PB Area II and PB Area III having increased significance in the voter profile, although their statistical significance hovered around the 0.05 threshold. This shift suggests a changing landscape in voter engagement and demographics, highlighting the dynamic nature of participatory budgeting voting behaviors over time.

In summary, the analysis of voters' profiles in Józsefváros's PB voting for 2022 and 2023 reveals a consistent negative correlation with the submission of ideas. This phenomenon could stem from disenchantment among participants whose ideas are rejected by the decision committees, leading to diminished interest in the voting process. However, the 2023 data suggest an intriguing counterpoint: Participants submitting multiple ideas may retain their engagement, probably due to the increased probability of at least one idea being accepted, thereby sustaining their interest and participation in the voting process. Gender dynamics within the voting population also evolved during this period. While female voters were more actively engaged in 2022, by 2023, the inclusion and active participation of male voters became more pronounced, indicating a shift towards a more gender-balanced voter base. Generational participation, initially led by Generation Y in 2022, broadened significantly by 2023 to include all generations as dominant forces in voting patterns. This generational diversification suggests a widening appeal and engagement across different age groups in the PB process. Spatial changes observed by 2023, particularly in PB Areas II and III, indicate a shifting focus or possibly enhanced outreach and engagement strategies in these areas. This spatial shift may reflect strategic adjustments or evolving community priorities, emphasizing the dynamic nature of participatory budgeting and its capacity to engage a wide array of community segments over time.

CONCLUSION AND DISCUSSION

In our research, we conducted a short-term examination of Józsefváros's PB program to determine the potential of local participatory budgeting in bolstering democratic participation, particularly in contexts experiencing diminishing democratic practices. We contextualized Józsefváros's PB within the participatory democracy paradigm, delineated its processes, and analyzed the narrowing democratic space in Hungary from a local standpoint.

Our research confirmed H_1 , related to the increase in participation and engagement. The PB process saw a notable rise in participation, with numbers

doubling by 2023. However, participation rates in total were about 1% in 2022 and 2% in 2023, indicating modest participation levels in the PB process for both years. Participants mainly represented the Generation Y cohort, with a slight female majority evident in both years. Remarkably, nearly 50% of 2022 participants re-engaged in 2023, underscoring the program's strong retention capability.

For PB idea submission, H_2 was also validated. Idea submissions nearly doubled, with more individual contributors and multiple submissions. The demographic profile, considering gender and age, was consistent over the two years, with Generation Y women predominantly participating in the PB idea submissions. However, only 10% of 2022's contributors resubmitted ideas in 2023. Thematic shifts emerged in 2023, emphasizing local government services and program execution while de-emphasizing public cleanliness and safety. The number of traffic and district greening ideas remained more-or-less steady. Furthermore, winning ideas consistently favored district greening, expanding municipal services, and investment initiatives across both years.

Our results did not support H_3 , despite observing a 1.14-fold increase in voter turnout over two years. Vote distribution and demographic patterns exhibited variability. While Generation Y remained the predominant voting group each year, by 2023, other generations also participated significantly in the voting process. Additionally, 2023 witnessed a more balanced gender representation among voters. Our findings further reveal that idea submission had a significant negative impact on voting intention. This effect likely arises from the observation that individuals whose ideas were not included on the ballot chose not to vote.

Our short-term study demonstrates significant enhancements in 2023 across all participation metrics of the PB program: participant count, diversity, volume of submitted ideas, and a multiplication in voter numbers. Evidently, at the local level, the PB bolstered democratic participation, a finding that is aligned with prior literature (Avritzer 2006; Cabannes 2004; Wampler 2010; Sintomer et al. 2008; Sintomer et al. 2012; Makowski 2013; Bernaciak et al. 2018; Bartocci et al. 2023). Contrasting some established findings, we present a novel insight: enhanced participation is feasible even within a semi-autocratic context that fundamentally counters broader democratic processes. However, it is vital to underscore that this spike in participation remains marginal and seems predominantly restricted to residents with specific socio-economic standings, corroborating earlier research (Király et al. 2016; Tomashevskaya et al. 2023; Baranowski 2019). Consequently, it is inconclusive if, in the long run, this reinforced participation will effectuate sustainable local participatory transformation (Goldfrank 2012), given the powerful adverse contextual influences and socio-economic limitations (Ganuza–Baiocchi 2012). Presently,

based on our results, the PB appears capable of amplifying participatory practices, albeit modestly, within a semi-autocratic, hybrid context.

Our research, centered on Józsefváros's PB program, acknowledges specific limitations that could lead to biases. Although our emphasis lies in quantitative methods, qualitative subtleties may be overlooked. Despite utilizing inferential statistics, understanding the complexity of human choices is inherently difficult. Future research should consider employing qualitative methodologies to deepen understanding alongside comparing PB initiatives in diverse semi-autocratic contexts. Additionally, there is a need to enhance the predictive capabilities of these research tools to generate more nuanced insights. In evaluating Józsefváros's PB program, it is pivotal not to reduce its significance to mere numerical benchmarks like participant and voter counts. Although such metrics are frequently spotlighted, especially within Hungary's politically intense environment, they risk misrepresenting outcomes. Solely fixating on these numbers might lead to overlooking the transformative societal objectives of programs like PB. A holistic interpretation necessitates contextualizing these statistics within the wider socio-political backdrop that often inhibits genuine participation (Kostadinova–Kmetty 2019; Gerő et al. 2020).

Within an international framework, Józsefváros's PB mirrors second-year trends observed in analogous programs. However, the sustainability of this growth and the realization of deeper goals such as empowerment remain uncertain. Given Hungary's documented participation apathy (Van Bezouw et al. 2019) and the recognized discrepancies in democratic engagement (Oross 2020), the potential impact of this PB in bolstering democratic participation is significant. Globally, there is a trend towards diminishing PBs to mere processes of project facilitation, overlooking their primary objective: fostering genuine community participation in local budgetary dialogues. Hence, it is paramount for PBs, especially those implemented in semi-autocratic systems, to devise methods that enhance diverse social group participation and fulfill their core purpose: empowering local communities to make decisions about budget matters and local affairs participatorily. Our findings indicate that Józsefváros is on a promising path toward this end, promoting genuine local involvement despite the political environment that opposes such initiatives.

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APPENDIX

Map A1: Distribution of total number of eligible voters across quarters

