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Designing Local Democracy for Health: Evidence from a Randomized Controlled Trial on Public Participation in Kenya

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Frontpage Photo: A line of villagers waiting to cast ballots for their preferred project.

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Abstract

Background

Participatory governance mechanisms, particularly participatory budgeting (PB), aim to give citizens a direct role in public spending decisions. While celebrated globally, evidence of their real-world impact—especially in low-income settings—is limited.

Study Design

We conducted a randomized controlled trial (RCT) in Elgeyo-Marakwet County, Kenya, assigning 200 villages to one of three PB formats—consultation, voting, deliberation—and comparing them to ~1,800 control villages. Each treatment village selected a health-related public good using its assigned decision-making process.

Key Findings

Infant mortality: PB villages saw a 22% average reduction; deliberation (29%) and voting (27%) produced the largest improvements.

Civic engagement: Structured participation increased turnout for community action, willingness to invest, and perceptions of fairness.

Cost-effectiveness: Voting ($10,060) were highly cost-effective relative to global health benchmarks.

Mechanisms: Deliberation fostered shared ownership and better-targeted investments; voting empowered citizens and legitimized decisions.

Policy Implications

The results demonstrate that how citizens participate matters. Simple consultation improves outcomes but falls short of more structured formats. Governments and donors should prioritize deliberative or voting-based PB to maximize developmental impact.

Conclusion

Well-designed participatory governance can save lives, build trust, and strengthen democracy—even in resource-constrained settings.

Preface

By Johan Lilja, Secretary General, Swedish International Centre for Local Democracy

The Swedish International Centre for Local Democracy (ICLD) is committed to strengthening local democracy and promoting sustainable development by supporting knowledge exchange, capacity-building, and municipal partnerships. Our research programme plays an important role in this mission, generating evidence and practical tools that can help local governments advance inclusive and participatory governance.

This report has been produced in conjunction with ICLD's Network for Equitable Health and is the 35th report to be published in ICLD's Research Reports series. It is a result of the research project that was financed by ICLD in the spring of 2025.

In short, this research tested three ways for communities in rural Kenya to influence local decisions. The outcome? Structured participation didn't just make people feel heard—it reduced infant mortality by up to 29%, boosted trust in government, and sparked civic engagement. But here's the twist: not all participation is equal. Villages that participated *more*, through voting or deliberation, saw the biggest gains. It turns out that *how* people participate matters. Simple consultations may tick a box, but real voice – through voting and discussion – builds ownership, trust, and smarter investments.

These findings ripple far beyond Kenya. In places where resources are tight and state capacity uneven, participatory budgeting offers a practical path to better services and stronger democracy. And these changes may even be life changing. A drop in infant mortality means healthier families and thriving communities.

As a final remark, I believe that policymakers and practitioners play a crucial role but they need to aim higher. To make impact you need to move beyond token participation and invest in inclusive, structured processes. To make concrete change you need to scale what works, adapt it to local contexts, and keep measuring impact. This project succeeded because researchers, local governments, and communities worked together. For me this collaboration model can be used as a blueprint for democratic innovation.

Visby, Sweden

Johan Lilja,
Secretary General, ICLD
November 2025

About the authors

Dr. Michael Touchton, Ph. D. is Professor of Political Science at the University of Miami and serves as the Faculty Lead for Global Health at the Institute for Advanced Study of the Americas. His research focuses on the political economy of development, participatory governance, and public health, with a regional emphasis on Sub-Saharan Africa and Latin America. Touchton employs experimental and mixed methods approaches to examine how democratic institutions influence economic growth, tax compliance, and health outcomes. He is the co-author of four books: *Voice in Local Development: Participation, Empowerment, and Accountability in Kenya* (Oxford University Press, 2025), *Participatory Budgeting in Global Perspective* (Oxford University Press, 2021), *Democracy at Work: Pathways to Well-Being in Brazil* (Cambridge University Press, 2019), and *Salvaging Community: How American Cities Rebuild Closed Military Bases* (Cornell University Press, 2019). His research has been published in leading journals such as the *American Political Science Review, The Lancet, Lancet Public Health, Lancet Global Health, and World Development.* Touchton has received grant funding from the U.S. National Science Foundation, the Hewlett Foundation, the World Bank, the G20, and numerous other public and non-profit entities. He earned his Ph.D. in Political Science from the University of Colorado Boulder.

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Introduction

Participatory governance has emerged as one of the most discussed and promoted approaches in contemporary international development, democratic theory, and public health policy. At its core, participatory governance involves empowering citizens to influence decision-making processes that shape public policy and resource allocation, often through structured institutions such as participatory budgeting (PB) (Fung & Wright, 2001; Wampler, 2007). Originating in Porto Alegre, Brazil, in the late 1980s, PB was designed as a mechanism to allow ordinary citizens—especially those traditionally marginalized from policy processes—to directly influence the allocation of public resources (Abers, 2000; Baiocchi, 2005). Since then, PB has spread to over 11,000 municipalities worldwide, adopted not only in Latin America but across Europe, Asia, and sub-Saharan Africa (Goldfrank, 2011; Ganuza & Baiocchi, 2012). International organizations, such as the World Bank, UN-Habitat, and the OECD, have championed PB for its democratic potential and purported developmental benefits (Shah, 2007; De Sousa Santos, 1998). In practice, however, the effects of PB on core development outcomes, such as public health, remain contested and under-researched (Cabannes & Lipietz, 2018; Gonçalves, 2014).

Health outcomes, particularly infant and maternal mortality, are key indicators of human development and government responsiveness (Nussbaum, 2011; Sen, 1999). They are also among the most tangible and emotionally resonant outcomes that governments can influence. While theoretical frameworks suggest that participatory governance should improve service delivery by incorporating citizen preferences, improving information flows, and enhancing accountability (Fung, 2006; Touchton et al., 2017), empirical studies often fall short of demonstrating these connections, frequently due to methodological limitations. Many studies are observational, rely on case studies, or suffer from selection bias, wherein more capable, better resourced, or more democratic governments choose to implement PB (Grillos, 2017; Olken, 2010).

In this context, Kenya provides a particularly relevant setting to examine the effects of PB on health. In 2010, the country adopted a new constitution that mandated political and fiscal decentralization and required citizen participation in local governance (Kilelo et al., 2015; Kramon & Posner, 2011). Kenya's constitution devolved significant fiscal, administrative, and political authority to 47 newly created county governments (Cheeseman et al., 2020). These counties were granted the responsibility for delivering key public services—particularly in health, water, sanitation, and local infrastructure—and were required by law to incorporate citizen input into their planning and budgeting processes (Rwigi et al., 2020; Oucho, 2010). Article 174 of the constitution explicitly promotes democratic and accountable exercise of power, while Article 196 requires public participation in county governance, including legislative and budgetary affairs.

However, while public participation is legally mandated, its implementation has been inconsistent (Herrera, 2017; Mayka & Abbott, 2023). Some counties have embraced participatory budgeting or other citizen engagement platforms, while others rely on tokenistic consultations or elite-driven processes (Platteau, 2004; Arnstein, 1969). As a result, the quality, inclusiveness, and effectiveness of participatory practices vary widely. Although all counties are required to incorporate citizen input, only a few—including Elgeyo-Marakwet—have adopted structured PB processes (Rwigi et al., 2020), where citizens make a binding decision on how to allocate a percentage of the county budget for development projects. Other counties also have different forms of participation in their budget processes, but they tend not to be as intensive or as binding as tradiational PB. This variation in the form and quality of participation across and sometimes within counties provides a natural opportunity for experimentation and comparison (Andersson & van Laerhoven, 2007; Mansuri & Rao, 2012).

The rationale for this study stems from several overlapping policy, theoretical, and empirical gaps. First, previous work in Brazil and other middle-income settings suggests PB can reduce infant mortality (Touchton & Wampler, 2014; Gonçalves, 2014), but there has been no rigorous evaluation of PB's impact in low-income, rural African settings where state capacity is lower, infrastructure is weaker, and community needs are often more acute (Grillos, 2018; Avritzer, 2010). Second, even within the literature on PB and health, there is limited evidence about

which forms of participation matter most (Goldfrank & Schneider, 2006; Baiocchi et al., 2011). Does simply asking for citizens' preferences (consultation) lead to meaningful improvements? Or does the type of engagement—such as voting or deliberation—play a decisive role in fostering better outcomes through processes perceived to be more informative, equitable, and legitimate (Collins, 2021; Humphreys et al., 2006)?

This study addresses these questions through a large-scale randomized controlled trial (RCT) conducted in Elgeyo-Marakwet County, Kenya. We randomly assigned 200 villages to one of three PB interventions—consultation, voting, or deliberation—and compare them to approximately 1,800 non-participating control villages. The control villages operate through business-as-usual budget processes, with county budget funding equal to the treatment villages. However, the research budget was only sufficient to administer distinct treatments in 200 villages, which operated outside of the standard government procedures. All treated villages received funds to implement a health-related public good, but the method of decision-making varied systematically. The interventions thus allow us to evaluate not only whether PB reduces infant mortality and improves community engagement but also which forms of PB are most effective (Touchton & Wampler, 2023; Beath et al., 2017).

From a theoretical standpoint, this study contributes to three major strands of literature: (1) the effectiveness of participatory institutions in development (Mansuri & Rao, 2012), (2) the role of deliberation in collective decision-making (Dryzek, 2000; Fishkin & Luskin, 2005), and (3) the political economy of public service delivery (Olken, 2010; Conning & Kevane, 2002). By experimentally varying the participatory mechanism, we test hypotheses drawn from deliberative democratic theory (Habermas, 1996; Cohen, 2009) and from empirical research on governance and health (Sen, 1999; McGuire, 2010). We hypothesize that more structured and interactive forms of participation—especially deliberation—will lead to stronger outcomes through mechanisms such as increased procedural fairness, collective ownership, and social learning (Hafer & Landa, 2007; Landemore, 2017).

Theory

The link between participatory governance and health outcomes is theoretically plausible but empirically ambiguous (Fung, 2006; Mansuri & Rao, 2012). Health indicators, including infant and maternal mortality, are often used as proxies for the effectiveness of public service delivery (Sen, 1999; Nussbaum, 2011). Improvements in these areas depend not only on clinical factors but also on social, economic, and institutional determinants, such as access to clean water, sanitation, nutrition, and trust in health systems (Gonçalves, 2014; Touchton et al., 2017). Participatory governance is thought to improve these determinants by empowering communities to prioritize interventions that reflect local needs (Abers, 1998; Baiocchi, 2005), monitor service delivery more effectively (Andersson & van Laerhoven, 2007), and hold public officials accountable (Platteau, 2004; Beath et al., 2017). However, despite the intuitive appeal of these mechanisms, robust causal evidence connecting PB to improved health outcomes is limited (Grillos, 2022; Humphreys et al., 2006).

A key challenge lies in the difficulty of establishing causality (Mansuri & Rao, 2004; Olken, 2010). Most existing research relies on observational data or single-case studies (Goldfrank, 2011; Avritzer, 2010). Such studies provide valuable insights into the dynamics of participation, but they are vulnerable to selection bias—governments that choose to adopt PB may already be more committed to responsive governance and better service delivery (Touchton & Wampler, 2014; Gonçalves, 2014). Similarly, citizens who participate in PB may be systematically different from those who do not (Grillos, 2018; Nylen, 2014), confounding attempts to attribute observed outcomes to the participatory process itself. To overcome these limitations, experimental and quasi-experimental approaches are required (Beath et al., 2017; Collins, 2021) to evaluate the impact of PB in a rigorous and policy-relevant manner.

From the perspective of participatory democracy, deliberation and voting are often seen as qualitative-

ly superior to mere consultation (Fishkin & Luskin, 2005; Barabas, 2004) because they involve more active and inclusive forms of engagement (Habermas, 1996; Dryzek, 2000). Deliberative processes, in particular, are thought to generate legitimacy by encouraging reasoned debate, equal voice, and mutual respect (Cohen, 2009; Farrar et al., 2010). Empirically, deliberation has been linked to greater buy-in, compliance, and willingness to contribute to collective projects (Humphreys et al., 2006; Grillos, 2022). Voting, while less deliberative, can still empower citizens by aggregating preferences transparently and equitably (Olken, 2010; Beath et al., 2017). In contrast, consultation—often characterized by top-down collection of opinions without meaningful decision-making power—may be less effective at stimulating civic engagement or improving public service outcomes (Arnstein, 1969; Rowe & Frewer, 2000).

This study tests these theoretical claims directly, using an experimental design that isolates the effects of each participatory approach (Touchton & Wampler, 2023; Beath et al., 2017). In each treated village, community members were invited to select one health-related public good—such as water infrastructure, latrine construction, or a health clinic—with the method of selection varying by treatment arm. This allows for comparison not only between participatory and non-participatory villages, but also among different forms of participation (Grillos, 2022; Humphreys et al., 2006), shedding light on what kinds of engagement matter most for improving infant mortality and related outcomes (Gonçalves, 2014; Touchton & Wampler, 2014).

Policy Change and Research Benefits

From a policy perspective, the stakes are high. Development agencies increasingly promote citizen engagement as a condition for funding and legitimacy. Yet without clear guidance on what types of engagement work, under what conditions, and to what effect, these efforts risk becoming box-ticking exercises rather than transformative tools. This study helps fill that void by offering rigorous evidence of the real-world impacts of participatory governance on a vital development outcome. Moreover, it addresses not only whether participation works, but how design choices within participatory processes can dramatically alter their effectiveness.

Finally, this project represents a novel collaboration between researchers, government, and civil society. It builds on a multi-year collaborative partnership between Purdue University and the University of Miami in the United States, Innovations for Poverty Action (IPA-Kenya), and the Elgeyo-Marakwet County Government. This collaboration has enabled high-fidelity implementation, buy-in from local stakeholders, and plans for policy uptake. The study also invests in local capacity building: training local enumerators, research assistants, and facilitators to manage complex interventions and collect high-quality data. It thus leaves behind not only academic insights, but also institutional infrastructure and human capital for future participatory reforms.

In sum, this study breaks new ground in the empirical evaluation of participatory governance. It provides causal evidence from a randomized controlled trial of how different modes of participation affect health outcomes in a rural, low-income context. It builds on theoretical work in democratic governance and deliberation, and responds directly to policy demands for more effective, inclusive, and accountable public service delivery. By focusing on health—a universally resonant and politically salient outcome—it highlights both the promise and the practicalities of local democracy in action.

Data and Methods

This study employed a randomized controlled trial (RCT) to evaluate the effects of participatory budgeting (PB) on public health outcomes in Elgeyo-Marakwet County, Kenya. RCTs are considered the gold standard in impact evaluation because they allow for causal inference by eliminating selection bias through random assignment. The study was designed to assess whether villages that engaged in participatory selection

of health-related public goods—through consultation, voting, or deliberation—experienced improved health outcomes, particularly reductions in infant mortality, relative to villages that did not participate in PB. Furthermore, the study sought to compare the effectiveness of participation to non-participation, as well as different types of participation to each other to determine whether participation produced stronger health outcomes, and which participatory designs did so.

Study Setting and Justification

Elgeyo-Marakwet County, located in the Rift Valley region of Kenya, was selected as the site for this intervention for several reasons. First, the county is politically stable and has a proactive government willing to partner with researchers. Second, its population is relatively representative of Arid and Semi-Arid Areas (ASAL) of Kenya in terms of income levels, infrastructure, and access to public services. Third, the county had already adopted PB at the ward level and was open to piloting more granular, village-level participation mechanisms. Finally, the region's moderate population density and existing administrative divisions made it logistically feasible to implement a randomized study at scale.

Kenya is a middle-income country with GDP per capita of $2,206 USD in 2024 (World Bank 2024). Its political system features competitive, multi-party elections under the 2010 Constitution, which was developed in the aftermath of governance challenges and political violence in the 2000s. Kenya's 2010 Constitution decentralized governance, creating 47 counties that operate as the second level of government, like states or provinces in many federal systems. The constitution also mandated public participation in county-level governance, but it did not specify the form this participation should take. As a result, Kenya's counties differ widely in their approaches, including holding participatory forums for the entire county, for 2+ sub-counties, for 20-30 wards of between 10 and 100,000 residents, for villages in at least one case, and for a combination of approaches in many counties. Note that a Public Participation bill, including required structures and guidelines for participation in budget processes is currently progressing through the national legislature, but it has not yet passed. In the absence of such guidelines, counties have had the discretion to pursue different interpretations of the participation requirement. Elgeyo-Marakwet was already among the leaders in implementing PB and showed interest in strengthening the process at the village level through empirical research. This political will was essential for securing community access, facilitating coordination with local health authorities, and implementing interventions faithfully.

Since adopting PB in 2015, the county has expanded its use and also remains open to experimentation and evidence-based reform. Importantly, the project builds on an existing infrastructure of trust and cooperation, enabling us to measure both short-term outcomes such as infant mortality, citizen satisfaction, perceptions of fairness, and set the stage for longer-term research.

Village Selection and Randomization

From a total population of 2,000 villages in Elgeyo-Marakwet County, a sample of 200 villages was drawn to participate in the study. The villages were stratified by ward to ensure geographic representativeness, with at least one village selected from each sublocation across all 20 county wards. This stratified random sampling ensured that local variation in economic conditions, ethnic composition, and pre-existing service access would be evenly distributed across study arms.

The 200 study villages were then randomly assigned to one of four groups:

- **Control Group** (n ≈ 1,800): Villages not included in the RCT continued using the county's standard, non-participatory procedures to allocate development funds.
- **Consultation Group** (n ≈ 67): Villages where health-related public goods were chosen based on

baseline surveys but without public meetings.

- **Voting Group** (n ≈ 67): Villages where participants gathered in a public meeting and selected their preferred public good through majority-rule voting.

- **Deliberation Group** (n ≈ 66): Villages where participants engaged in structured deliberative meetings prior to reaching a consensus decision on the selected public good.

Randomization was conducted at the village level and blocked by ward to ensure balanced distribution across the county's administrative geography. Blocking by ward controlled for potential confounders associated with geography, governance capacity, and health infrastructure. Innovations for Poverty Action–Kenya (IPA-Kenya) and the University of Miami coordinated the random assignment using standard computer-generated randomization algorithms in Stata.

To ensure transparency and buy-in, county government officials were briefed on the randomization strategy, and selected village administrators were informed of their group assignment only after baseline data had been collected.

Ethical Approvals and Community Entry

The study received ethical approval from both the Kenyan National Commission for Science, Technology and Innovation (NACOSTI) and the University of Miami Institutional Review Board (IRB). Informed consent was obtained from all participants involved in surveys and public meetings. Community entry was coordinated through local chiefs, sub-chiefs, and village elders, who were briefed on the purpose and structure of the study. The participatory interventions were introduced as part of a research collaboration with the county government, not as external donor projects, in order to minimize expectation bias or dependency effects. In this case, the co-authors spent three years working with the county government prior to piloting and revising procedures over an additional year of co-creation. The co-authors had previously worked with the county government during World Bank-sponsored piloting of the original PB initiatives at the ward level beginning in 2016. This long-term relationship fostered trust between the researchers and public officials, which allowed the project to move forward with the government's support.

Baseline Surveys and Community Preferences

Before any intervention took place, our research team administered a detailed baseline survey across all 200 selected treatment villages. The survey was administered to approximately 150 households per village, resulting in over 30,000 completed interviews. The survey collected data on household demographics, education levels, health knowledge and behaviors, trust in government, previous experience with public goods, and willingness to contribute labor or money to community projects. Critically, respondents were also asked to rank their top health-related infrastructure needs from a standardized list, which included water piping systems, latrine construction, handwashing stations, maternal health clinics, and water filtration devices.

In consultation and voting group villages, these preference rankings directly influenced project selection. In deliberation villages, the preference data were used to inform the facilitators and community members, but final decisions were made during the deliberative process.

To ensure accuracy and local relevance, the survey instruments were translated into Swahili, Keiyo and Marakwet (the two dominant forms of Kalenjin, the local language family), piloted in four non-study villages, and refined before full deployment. Enumerators were recruited locally and trained intensively over two weeks to ensure high standards of data quality, ethical conduct, and cultural sensitivity. All data were collected electronically using tablets and uploaded to a secure server daily.

Treatment Interventions

Each of the 200 villages received a public good investment valued at approximately $1,000 USD, chosen from the standardized list of health-related goods and indexed to the approximate value of annual county government development spending in all villages. However, the mechanism through which the good was selected varied by treatment arm.

Control Group: These villages did not receive an intervention, but still received any health-related public goods from the county government through their usual budget processes. However, there is no county-wide mechanism for using public participation to allocate development funds and development projects tend to be distributed through top-down decisions among public officials without official consultation in the villages.

Consultation Group: In these villages, no public meeting was held. Instead, project selection was based on the aggregate results of the baseline survey. The researchers selected the highest-ranked item across all surveyed households as the public good. Community members were informed of the selection and its rationale, but they had no opportunity to deliberate or vote on the outcome. This method represents the lowest-intensity form of participation and resembles many government-led "needs assessments" that are conducted without meaningful public deliberation in many sites across Kenya and the Global South

Voting Group: These villages hosted a public meeting attended by all interested residents. Local facilitators trained by IPA-Kenya and the researchers opened the session by describing the available public goods, summarizing baseline preference data, and outlining the rules of the selection process. Participants then voted by secret ballot on their preferred option. The good receiving the most votes was selected for implementation. There was minimal discussion or debate before the vote. This method emphasized preference aggregation through a majority-rule mechanism but lacked the structured discussion element of the deliberative model.

Deliberation Group: These villages participated in a structured public meeting designed to foster reason-based discussion, consensus-building, and inclusive decision-making. The meetings followed a standardized facilitation script adapted from deliberative polling and citizen assembly models. Facilitators encouraged participants to express their preferences and provide justifications, to listen to others respectfully, and to consider trade-offs. After a period of structured dialogue, participants voted by secret ballot, but the goal was to reach consensus through discussion before the formal vote. Deliberation sessions were audio-recorded for quality control and later qualitative analysis.

All meetings were held in open public spaces and scheduled to maximize accessibility, often during weekends or late afternoons. Special efforts were made to include women, youth, elders, and marginalized groups. In deliberation villages, participants were randomly selected from the baseline sample and supplemented by public invitations to ensure representation and legitimacy.

Public Good Delivery

After the participatory process, IPA-Kenya coordinated the procurement and delivery of the selected public goods. Local contractors and laborers were hired where possible to foster community ownership and sustainability. For water-related projects, local water authorities were consulted to ensure technical feasibility and proper siting. All projects were delivered within six months of the selection meeting. Upon completion, a public dedication ceremony was held in each village to mark the delivery, thank participants, and reinforce the link between participation and tangible outcomes.

Approximately one year after implementation, all treatment villages held a "community action day," in which residents were invited to help clean or maintain the delivered good. This provided a behavioral measure of community investment and willingness to sustain the public good beyond its installation.

Outcome Measurement

The primary outcome variable for this study is the village-level infant mortality rate (IMR), defined as the number of deaths of infants under one year of age per 1,000 live births. We chose this indicator because of its central importance to public health, its measurability over relatively short time horizons, and its sensitivity to improvements in basic health infrastructure such as clean water, sanitation, and primary care—all areas that were directly targeted by the public goods selected in the intervention.

We collected infant mortality data from two complementary sources:

1. **Community Health Worker (CHW) Records:** Each village in Elgeyo-Marakwet has a designated CHW who maintains basic birth and death registries. We worked with the county health office to digitize and validate these records for the 2017–2025 period.

2. **Ministry of Health Data:** Aggregated health data from the county and national Health Information System (DHIS2) provided an additional layer of validation.

Secondary outcomes in the treatment villages included self-reported satisfaction with the project and process, perceptions of fairness and transparency, willingness to invest time or money in future community projects and observed participation in a village-wide "community action day" held after project implementation.

Perceptions of fairness and satisfaction were captured through structured Likert-scale survey items. Willingness to invest was measured both through survey responses and observed behaviors (e.g., time spent at the action day, volunteer sign-ups). These attitudinal and behavioral outcomes were critical for evaluating the extent to which different participatory processes also improved civic trust and collective efficacy—key ingredients for sustained local development.

Statistical Analysis

Our main analytic strategy was a difference-in-differences (DiD) design, comparing changes in IMR and secondary outcomes in the treatment groups (consultation, voting, deliberation) to those in the control group, before and after the intervention. The DiD model specification was as follows:

$$Yivt=\beta0+\beta1Postt+\beta2Treati+\beta3(Postt\times Treati)+\gamma Xivt+\delta v+\epsilon ivt$$

Y_{ivt} = \beta_0 + \beta_1 Post_t + \beta_2 Treat_i + \beta_3 (Post_t \times Treat_i) + \gamma X_{ivt} + \delta_v + \epsilon_{ivt}

Yivt=β0+β1Postt+β2Treati+β3(Postt×Treati)+γXivt+δv+ϵivt

Where:

- Y_{ivt} is the outcome for household i in village v at time t
- $Post_t$ is an indicator for post-intervention period
- $Treat_i$ is an indicator for assignment to a treatment group
- X_{ivt} is a vector of control variables (e.g., household size, maternal education, wealth index)
- δ_v is a village fixed effect
- ϵ_{ivt} is the error term

All standard errors were clustered at the village level to account for intra-village correlation. Robustness checks included models with and without controls, models using log-transformed IMR to address skewness, and placebo tests using pre-intervention data.

We also conducted subgroup analyses to explore heterogeneous treatment effects by household income, maternal education, ethnicity, and baseline attitudes toward government. These analyses were pre-registered and theory-driven, based on existing literature suggesting that participatory interventions may work differently for marginalized vs. more empowered groups.

For secondary outcomes such as satisfaction, perceptions of fairness, and willingness to contribute, we estimated intent-to-treat effects using OLS regression with

treatment dummies and village-level clustering. For behavioral measures (e.g., action day attendance), binary logit and count models were used as appropriate.

Power Calculations

Prior to implementation, we conducted prospective power analyses using the software Optimal Design. Based on previous studies of PB and health (Touchton & Wampler 2014; Grillos 2017), we assumed a moderate effect size of 0.28 standard deviations, an intra-cluster correlation coefficient (ICC) of 0.10, and 150 respondents per village.

With 200 villages divided across three treatment arms and one control group, the design achieved a minimum detectable effect size (MDES) of 0.13 at 80% power and $\alpha = 0.05$. This provided sufficient sensitivity to detect meaningful changes in infant mortality and secondary outcomes, including between-treatment contrasts (e.g., voting vs. consultation, deliberation vs. voting). In the event of statistically indistinguishable results between two treatment arms, we had the option of pooling them to improve statistical power for comparisons against the remaining group.

Post hoc power analysis conducted after baseline data collection confirmed the robustness of our design assumptions, and attrition between baseline and endline was minimal (<5%), further preserving analytic integrity.

Results

This section presents the results of the randomized controlled trial, beginning with primary outcomes on infant mortality and followed by secondary outcomes related to citizen engagement, perceptions of fairness, and willingness to invest in community projects. It also disaggregates results by type of participatory mechanism—consultation, voting, and deliberation—to assess whether different approaches yielded different impacts.

Primary Outcome: Infant Mortality

The most striking result of the intervention is a substantial reduction in infant mortality in villages exposed to participatory budgeting processes. Across all treated villages (n = 200), the average infant mortality rate (IMR) decreased by 21.9% in the post-treatment period compared to control villages. This decline is not only statistically significant at the $p < 0.01$ level, but also substantively meaningful in a context where national progress on infant mortality has plateaued in recent years.

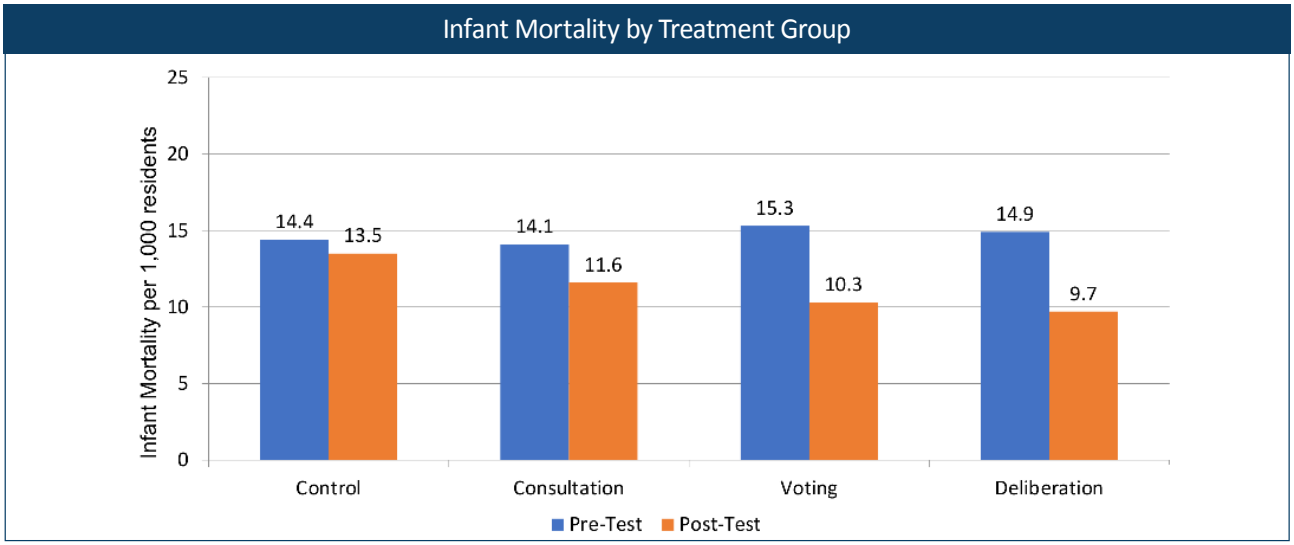
More precisely:

- **Control villages** experienced a modest decline in IMR from 14.4 to 13.5 deaths per 1,000 live births—a 6.6% reduction over the study timeframe.
- **Consultation villages** saw a sharper drop from 14.1 to 11.6—a 17.8% reduction.
- **Voting villages** recorded a decline from 15.3 to 10.3—a 32.7% reduction.
- **Deliberation villages** showed the greatest decrease, from 14.9 to 9.6—a 35% reduction.

These figures suggest that participation, in any form, improves health outcomes relative to non-participation. However, more structured and interactive forms of engagement, such as voting and deliberation, produce significantly larger effects than consultation alone. The difference-in-differences estimates confirm that both voting and deliberation groups experienced greater reductions in infant mortality than the consultation group ($p < 0.05$), and the deliberation group outperformed voting slightly, although this difference is not statistically significant at conventional thresholds.

The figure below summarizes these changes.

Figure 1. Change in Infant Mortality Rates (per 1,000 live births)

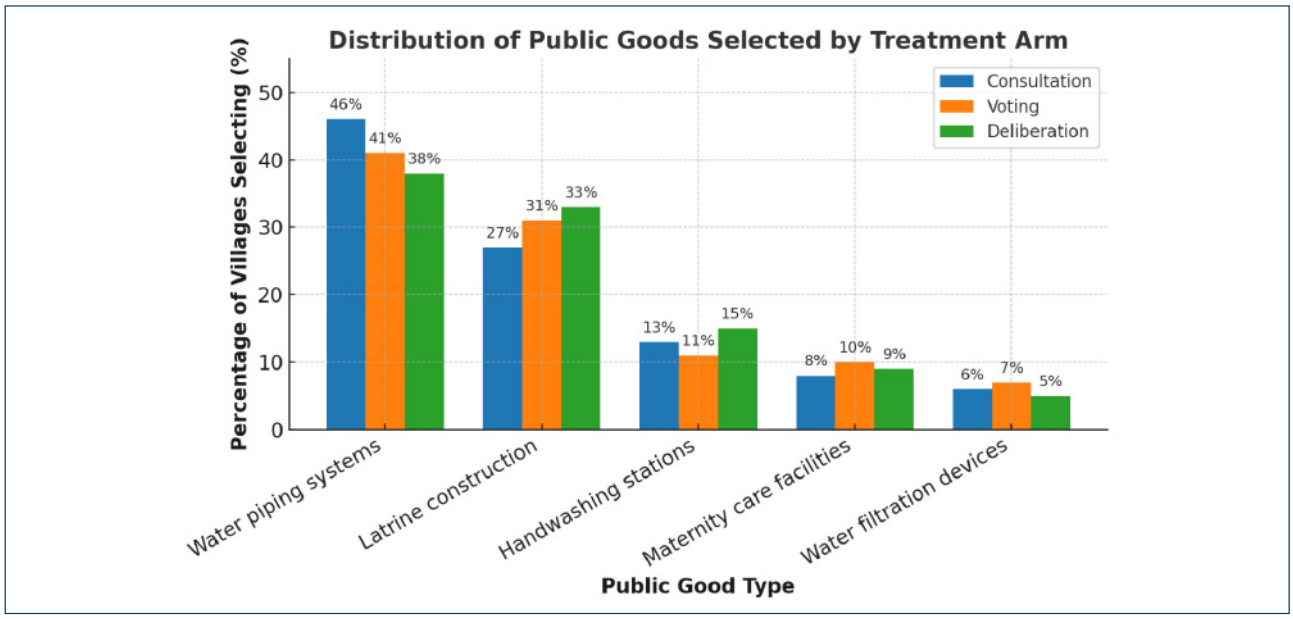


The magnitude of these effects becomes clearer when translated into absolute numbers. Across the 200 treated villages, the interventions are estimated to have theoretically prevented approximately 30 infant deaths in the 12-month period following implementation, relative to the control trend (calculations appear in the appendix). Most of these estimated lives saved occurred in the voting and deliberation villages, where the engagement process appears to have fostered greater investment in high-impact, health-promoting public goods–potentially beyond those delivered through the participatory processes.

Selected Public Goods by Treatment Arm

To better understand the mechanisms driving these improvements in health outcomes, we analyze the types of public goods selected by communities under each treatment condition. Table 1 summarizes the distribution of chosen interventions.

Table 1. Distribution of Public Goods Selected by Treatment Arm



The type of public goods selected across treatment arms were broadly similar, suggesting these choices do not drive the observed outcomes surrounding infant mortality. Instead, we infer that the process itself generates community will for collective action on health based on the secondary outcomes described below.

Perceived Fairness and Satisfaction

A central objective of the study was to determine whether different participatory mechanisms not only improved health outcomes but also shaped how citizens viewed their local governments and decision-making processes. To this end, the post-treatment survey captured residents' satisfaction with the project selection process, their perceptions of procedural fairness, and their attitudes toward government responsiveness.

We find significant differences across treatment arms:

- In **consultation villages**, 68% of respondents agreed or strongly agreed that the process was fair.
- In **voting villages**, this figure rose to 84%.
- In **deliberation villages**, it reached 91%.

The control group, in contrast, reported only 44% agreement that the standard county decision-making process was fair. These differences are statistically significant at the 0.01 level across all comparisons. These results suggest that even minimal forms of engagement, such as survey-based consultation, improve citizens' sense of procedural fairness compared to the opaque, top-down processes common in control villages. However, the more interactive and structured the participation, the more pronounced the effect. These findings are particularly important for contexts like Kenya, where distrust in government remains widespread. Improving perceptions of fairness and responsiveness through participatory institutions may foster greater social cohesion, civic trust, and long-term support for local governance.

Behavioral Engagement and Ownership

In addition to self-reported attitudes, the study measured behavioral indicators of community engagement, including participation in project implementation and maintenance activities. The most salient of these was the "Community Action Day", held in each treatment village several months after the public good was installed.

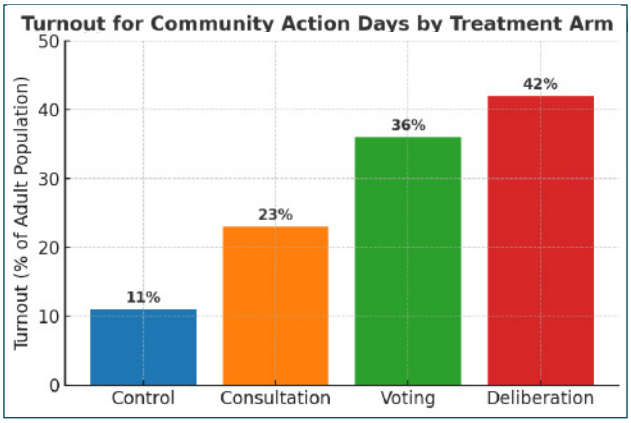
On this day, residents were invited to perform maintenance tasks, such as clearing brush, cleaning latrine walls, or clearing water sources and pipes of sediment. Participation was recorded through physical headcounts and attendance logs verified by facilitators.

Results:

- **Deliberation villages** had the highest average turnout (87 residents per village), followed by:
- **Voting villages** (74),
- **Consultation villages** (51), and
- **Control villages** (28, where action days were held only symbolically or through local leaders).

When turnout is expressed as a percentage of the adult population, we observed the following village turnout rates:

Figure 2. Turnout for Community Actions Days by Treatment Arm.



These figures underscore the powerful effect of participatory processes in fostering **ownership** over community goods. The deliberative format appears particularly effective at generating this type of collective investment, likely because it encourages discussion, listening, and shared reasoning—elements known to strengthen commitment to group decisions.

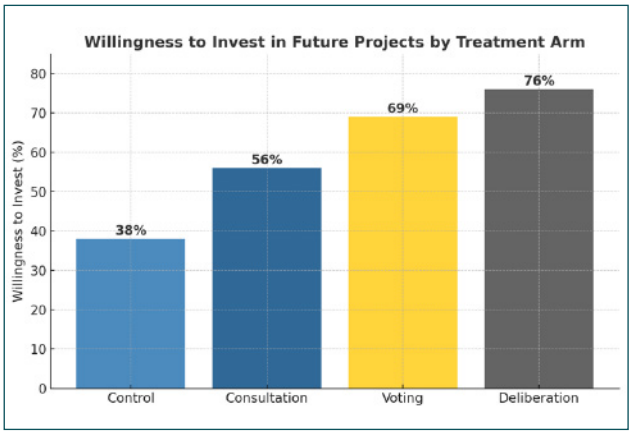
Willingness to Invest in the Future

Another important behavioral measure was respondents' willingness to invest time or money in future community projects. In the post-treatment survey, we asked:

"Would you be willing to contribute time or money to a future community project like this one?"

Respondents answered on a 5-point Likert scale (from "Definitely not" to "Definitely yes"). Figure 2 below shows the share of respondents who selected "Probably yes" or "Definitely yes."

Figure 3. Willingness to Invest in Future Projects (by Treatment Arm)



The jump in willingness to contribute between consultation and voting/deliberation is substantial—nearly 20 percentage points. This suggests that not only are more interactive processes more effective at generating satisfaction and trust, but they also build momentum for future collective action.

These findings carry important implications for policy. In resource-constrained environments, local governments often struggle to maintain infrastructure or scale successful interventions. By mobilizing community resources through participatory processes, they can reduce dependency, enhance sustainability, and create virtuous cycles of engagement.

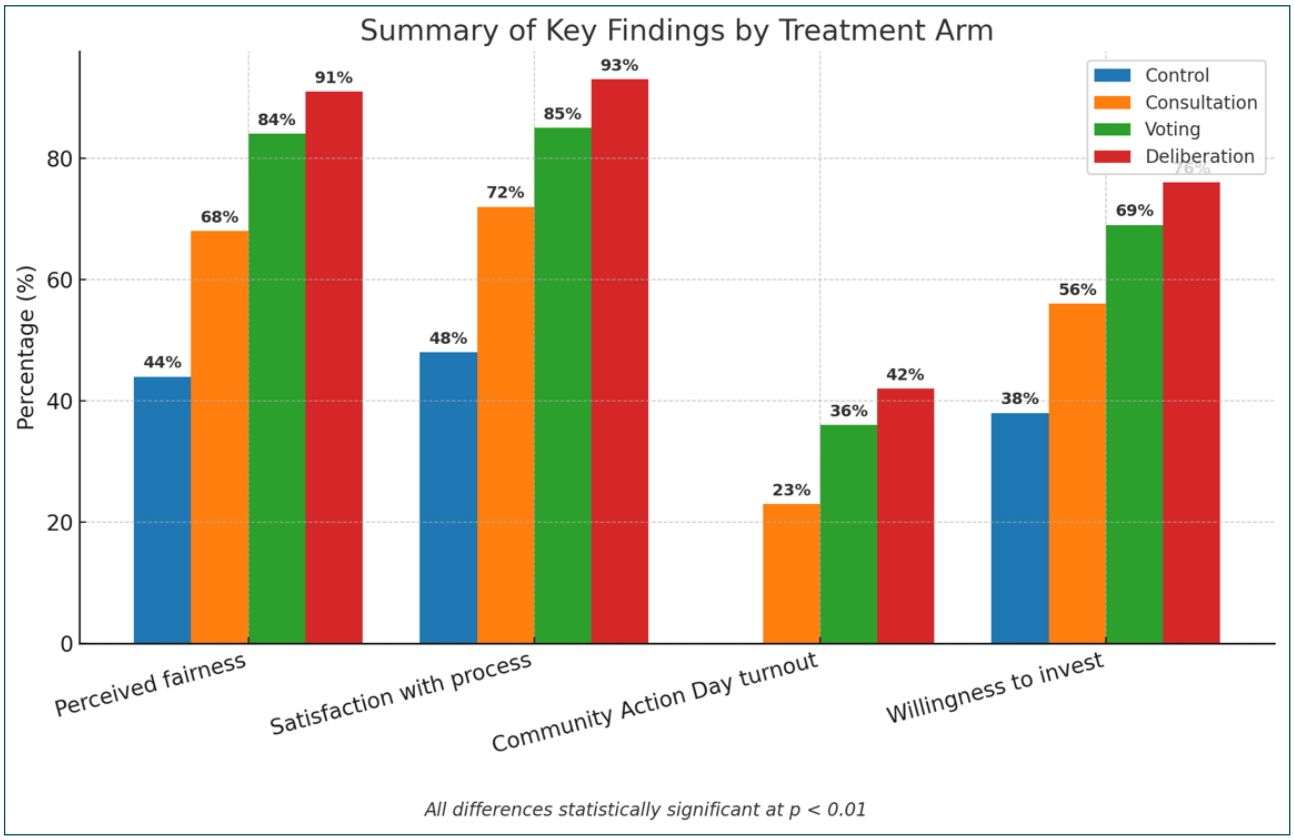
Subgroup Analyses: Gender and Socioeconomic Status

We conducted subgroup analyses to explore how these engagement outcomes varied by gender, education, and wealth quintile. Several key findings emerged:

- **Women** were slightly less likely than men to report feeling that the process was fair in the consultation group (64% vs. 70%) but equally likely in the voting and deliberation groups.
- In **deliberation villages**, the gender gap in perceived fairness disappeared entirely, with both men and women reporting over 90% agreement.
- **Low-income respondents** were significantly more likely to express increased trust in government in deliberation villages compared to consultation or control groups. This suggests that deliberative processes may help mitigate class-based distrust in state institutions.

These heterogeneous effects support arguments from deliberative democratic theory that structured engagement can promote inclusion and equality by leveling the playing field for historically marginalized groups.

Figure 4 presents a summary of the key secondary findings by treatment arm:



Robustness Checks and Model Validation

To ensure the reliability of our findings, we conducted a series of robustness checks. First, we estimated treatment effects using multiple model specifications:

1. Basic difference-in-differences (DiD) model with fixed effects

2. DiD with household- and village-level covariates, including maternal education, wealth index, household size, and access to health services

3. Cluster-robust standard errors to account for intra-village correlation

4. Random effects models to test for unobserved heterogeneity

All specifications confirmed the primary result: participatory interventions—particularly voting and deliberation—significantly reduced infant mortality relative to the control group. The estimated treatment effects varied slightly in magnitude but remained statistically significant ($p < 0.05$) across all models.

We also conducted placebo tests using pre-treatment infant mortality trends and found no evidence of differential trajectories prior to the intervention, supporting the assumption of parallel trends in DiD estimation.

Finally, we checked for survey attrition bias between baseline and post-treatment rounds. Attrition was low (under 5%) and not systematically correlated with treatment assignment or key demographic variables, minimizing concerns about non-random loss to follow-up.

Subgroup Variation in Health Outcomes

To explore heterogeneous treatment effects, we stratified the sample based on several pre-specified characteristics, including **maternal education, household income**, and **distance to the nearest health facility**.

- In **households with lower maternal education**, deliberation villages showed the largest reductions in infant mortality (a 36% drop), compared to 24% in the general population. This suggests that structured deliberative processes may especially benefit less-educated communities by fostering information sharing and consensus building around effective health investments.

- In **higher-income households**, the difference between consultation and voting groups was less pronounced, perhaps indicating that wealthier respondents are better equipped to navigate and benefit from any form of participation.

- Villages **located farther from formal health facilities** (defined as more than 10 km) saw larger gains from deliberation—suggesting that the participatory process helped identify and address bottlenecks that were invisible to policymakers or external observers.

These results underline the value of participatory institutions not just as general tools for governance reform, but as targeted mechanisms to close equity gaps in public service delivery.

Qualitative Insights from Deliberation Sessions

To supplement the quantitative findings, we conducted a qualitative analysis of transcripts from 40 randomly selected deliberation sessions. These transcripts were coded for themes such as **information exchange, collective reasoning, concerns about equity**, and **narratives of shared responsibility**.

Several themes emerged:

1. **Informational gains:** In many cases, participants arrived with limited knowledge of the available options. Deliberation allowed them to learn from neighbors and facilitators about the relative costs, benefits, and maintenance requirements of each project. For example, one woman remarked, "I didn't know that water filters require changing every few months. Maybe the handwashing station is better."

2. **Appeals to fairness and vulnerability:** Participants frequently referenced the needs of marginalized groups, such as children, pregnant women, or elderly residents. In one session, a man argued: "We all need water, but the children are dying because they are drinking from the river. We must protect them first."

3. **Norm-building and legitimacy:** The deliberative process appeared to strengthen collective identity and procedural legitimacy. Participants often emphasized shared responsibility and the value of open dialogue. One elderly participant stated: "Even if my choice is not picked, I'm happy because I was heard, and we made this decision together."

These insights support theoretical claims that deliberation generates not only better decisions, but also stronger social norms of inclusion, fairness, and shared ownership—norms that are likely to improve long-term maintenance and trust.

Limitations and Data Gaps

While the study generated rich empirical evidence, several limitations warrant consideration:

- The **evaluation period was limited to one year** after project implementation. This restricts our ability to assess long-term sustainability or downstream impacts such as maternal health, child nutrition, or school attendance.

- The **reliability of infant mortality estimates** could be affected by underreporting, especially in households with limited contact with health services. We used multiple sources to address this, but some residual bias may remain.

- The **deliberation sessions varied in quality**, depending on facilitator skill, weather conditions, and community dynamics. Though implementation protocols were standardized, qualitative variation is inevitable and may influence results.

Despite these caveats, the consistency of the quantitative findings, combined with qualitative evidence and robust implementation, lends strong support to the conclusion that participatory processes—particularly structured deliberation—can improve both health outcomes and civic engagement.

Discussion

The results of this study demonstrate that participatory budgeting (PB)—especially when designed to include structured forms of interaction like voting and deliberation—can generate significant improvements in both health outcomes and democratic engagement (Touchton & Wampler, 2023; Gonçalves, 2014). The 22% average reduction in infant mortality across treated villages, and the additional gains from more active participatory formats, represent one of the strongest empirical endorsements of participatory governance as a tool for health system improvement in low-income settings (Avritzer, 2010; Mansuri & Rao, 2012). These findings align with prior observational evidence from Brazil, Indonesia, and Afghanistan, but extend it through a rigorous randomized controlled trial in a rural African context (Beath et al., 2017; Olken, 2010; Touchton & Wampler, 2014).

These findings hold several implications for policy and theory. At the most basic level, they provide robust experimental evidence that citizen participation in local decision-making leads to tangible, life-saving outcomes, even in resource-constrained environments (Abers, 1998; Fung, 2006). This is not simply a matter of improving perceptions or symbolic engagement—although those are important (Arnstein, 1969; Rowe & Frewer, 2000)—but of affecting core development indicators. The results challenge persistent skepticism about whether participation "works" (Mansuri & Rao, 2012; Platteau, 2004) and suggest that, when designed well, it can be not only normatively desirable but also instrumentally effective (Fung & Wright, 2001; Baiocchi et al., 2011).

Public meeting to discuss spending priorities

Linking Participatory Mechanisms to Outcomes

One of the central contributions of this study lies in its comparative evaluation of different participatory formats. While all forms of PB showed positive effects relative to the control group, voting and deliberation clearly outperformed consultation alone in nearly every domain—infant mortality, perceived fairness, willingness to invest, and community action (Collins, 2021; Humphreys et al., 2006; Grillos, 2022). This pattern supports hypotheses from deliberative democratic theory, which emphasizes the importance of dialogue, reason-giving, and mutual understanding (Habermas, 1996; Dryzek,

2000; Cohen, 2009). Deliberation not only surfaces more information but also legitimizes the process by giving participants a voice and creating shared ownership (Farrar et al., 2010; Landemore, 2017). These mechanisms appear to explain why communities in the deliberation arm selected more cost-effective and appropriate public goods—such as latrines and handwashing stations—which in turn had greater health impacts (Gonçalves, 2014; Grillos, 2018).

The strong performance of the voting arm also deserves attention. Though lacking the structured dialogue of deliberation, the act of casting a ballot may still create a sense of empowerment and procedural fairness (Olken, 2010; Beath et al., 2017), especially in settings where electoral processes are often opaque or elite-driven (Kramon & Posner, 2011; Herrera, 2017). Voting can also help resolve conflicts and generate legitimacy for collective decisions—an important asset in ethnically or politically diverse communities like those found in Elgeyo-Marakwet (Cheeseman et al., 2020; Rwigi et al., 2020).

By contrast, the consultation model, while still better than the status quo, appears insufficient to fully activate the benefits of participation (Arnstein, 1969; Rowe & Frewer, 2000). Simply asking people what they want—without empowering them to decide or deliberate—may limit the depth of engagement and reduce commitment to the outcome (Andersson & van Laerhoven, 2007; Lawrence, 2006).

These distinctions matter enormously for policy. Too often, governments and donors opt for the easiest or cheapest forms of "participation," such as surveys or comment boxes, and assume they are fostering democratic input (Cabannes & Lipietz, 2018; Shah, 2007). These "easier" forms of participation are more effective than the distribution of development projects without participatory input (Pretty, 1995; Agrawal & Gupta, 2005), but this study also suggests that more robust forms of engagement—though costlier—are more effective in generating real impact (Baiocchi et al., 2011; Touchton et al., 2017).

Causal Mechanisms

The evidence from this RCT, particularly the qualitative data from deliberation transcripts, supports several hypothesized mechanisms of change:

1. **Improved information flow:** In deliberation sessions, participants learned about the relative costs, benefits, and maintenance demands of various projects, leading to more informed choices.

2. **Legitimacy and compliance:** Residents were more likely to support, maintain, and invest in projects they helped select, especially when decisions were seen as fair and inclusive.

3. **Social learning and norm reinforcement:** Through dialogue, residents developed shared understandings of community needs and responsibilities, promoting cooperative behavior.

4. **Enhanced accountability:** Even though the interventions were limited to single projects, the participatory process increased citizens' expectations for transparency and responsiveness in future governance interactions.

These mechanisms are mutually reinforcing. Better information improves deliberation; fair processes boost legitimacy; increased legitimacy enhances compliance and investment. The result is a virtuous cycle that improves both outcomes and trust.

Cost-Effectiveness and Return on Investment

While the effectiveness of PB in improving infant mortality and civic engagement is compelling, the question of cost-effectiveness is critical for determining whether these interventions can be scaled and sustained. In this study, each treated village received a grant of approximately USD $1,000 to implement a locally chosen health-related public good. Including the costs of facilitation, monitoring, and community engagement activities, the total

per-village cost averaged approximately $1,700 for consultation, $1,900 for voting, and $2,100 for deliberation.

When paired with the estimated number of infant lives saved—based on administrative data and validated by community health worker reporting—these figures produce remarkable returns. Using the estimate of 30 infant deaths averted across 200 villages, the average cost per life saved was:

- **Consultation:** ~$1,700 / village → ~$17,800 per life saved
- **Voting:** ~$1,900 / village → ~$9,790 per life saved
- **Deliberation:** ~$2,100 / village → ~$10,060 per life saved

These costs compare favorably to many commonly funded global health interventions, such as bed nets, oral rehydration therapy, or immunization campaigns. Moreover, these common interventions do not include the additional, longer-term benefits such as improved water access, sanitation, civic trust, and local capacity-building, all of which contribute to more resilient and responsive governance.

The higher costs of voting and deliberation are more than justified by their additional benefits—not only in health outcomes but also in fairness perceptions, community action, and willingness to invest in the future. For donors and governments concerned with "value for money," structured PB models appear to deliver substantial returns.

Scalability in Kenya and Beyond

Scalability is another crucial consideration. Can the success of PB within this RCT be replicated at scale—across other counties in Kenya, and in other countries with decentralized governance structures?

There are several reasons for optimism:

1. **Institutional alignment:** Kenya's 2010 Constitution mandates public participation in county decision-making and budgeting. Many counties already have legal and administrative frameworks for citizen engagement, though implementation quality varies. This makes Kenya fertile ground for expanding structured PB models without requiring wholesale institutional redesign.

2. **Local government interest:** Elgeyo-Marakwet's government has expressed a strong desire to continue PB and scale successful models. Other counties have also shown interest, particularly in the context of learning exchanges and national forums for devolved governance.

3. **NGO and civil society capacity:** Organizations like Innovations for Poverty Action (IPA), as well as local civil society networks, have gained experience in implementing PB at scale and can support training, facilitation, and monitoring.

4. **Cost-sharing models:** As PB models mature, counties could share implementation costs with communities, NGOs, and donors, reducing the fiscal burden on any one actor.

Yet, Elgeyo-Marakwet County may be particularly fertile ground for PB relative to other Kenyan counties and to other locations in Sub-Saharan Africa. Not all counties have the same level of political will, administrative capacity, or civil society engagement. Electoral dynamics may discourage inclusive budgeting if elites fear losing control. Moreover, scaling deliberation in particular requires sustained investment in facilitation, trust-building, and conflict management.

To address these challenges, policymakers and donors should consider sequencing: beginning with simpler models like voting in counties with less

experience and gradually introducing deliberation as capacity and trust grow. National institutions, such as Kenya's Council of Governors and the Ministry of Devolution, can also play a role by providing training, templates, and peer-learning platforms. These include seminars, webinars, and other training sessions that Elgeyo-Marakwet County and the researchers co-create along with a distribution of case study materials to educate other counties. We recognize the resource constraints county governments face, but the following are direct recommendations that counties should consider as they design and reform their participatory institutions.

Design Lessons for Participatory Institutions

First, county governments should embrace higher forms of participation for improved health outcomes, not just top-down, non-binding consultative processes. Next, **not all forms of participation are equal**. Consultation, while easier to implement, does not yield the same outcomes as more structured mechanisms like voting or deliberation. This has important implications for how governments and donors **design** participatory institutions.

Key design recommendations include:

- Structure matters: Giving citizens real decision-making power—through voting or deliberation—is critical for legitimacy, ownership, and impact. Passive forms of consultation are insufficient.

- **Facilitation is essential:** Deliberation, in particular, requires skilled facilitators to ensure inclusive participation, manage conflict, and surface relevant information. Investments in training and support are therefore non-negotiable. Moreover, investment in citizen participation forums is necessary to reflect the cost of administering these forums.

- **Transparency and follow-through:** Citizens must see that their input leads to visible outcomes. This requires clear communication, timely implementation, and public monitoring.

- **Inclusivity and equity:** Special efforts must be made to ensure women, youth, and marginalized groups are represented and heard. This includes scheduling meetings at accessible times, providing transport or childcare, and using culturally appropriate methods of dialogue.

- **Iterative learning:** Participatory institutions should not be static. Governments should experiment, evaluate, and refine their models based on evidence—just as this study has done.

Finally, while this study focused on health-related public goods, the lessons extend more broadly. The same mechanisms that improved infant health—information-sharing, collective ownership, perceived fairness—can be harnessed to improve outcomes in education, agriculture, infrastructure, and other sectors, as well as to promote accountable governance in general.

Study Limitations and Considerations

Despite the compelling findings, this study has several limitations that should temper its interpretation and guide the design of future research.

First, the time horizon of the study is relatively short. The outcomes assessed—particularly infant mortality and community engagement—were measured within one year of project implementation. While this is a standard evaluation window in development research, it does not allow for analysis of long-term sustainability, spillover effects, or secondary outcomes such as maternal health, child nutrition, or educational attainment. Public health improvements may compound over time, and community attitudes toward government may evolve with repeated exposure to participatory mechanisms.

Second, although we attempted to standardize intervention delivery across villages, there was inevitable

variation in implementation fidelity—particularly in the deliberation arm, which depends heavily on facilitator quality, group dynamics, and logistical factors (e.g., weather, accessibility). We spent considerable time training facilitators, but up to two weeks of training time is costly and, even with extensive training some deliberation sessions were vibrant and inclusive, while others struggled with participation or domination by local elites. This heterogeneity is common in field experiments, but it introduces noise and makes it harder to isolate a single "deliberation effect." It also raises a question for government design processes as to the value of deliberation relative to the long training required for implementation.

Third, the measurement of infant mortality, while carefully triangulated using household surveys, administrative data, and community health worker reports, may still be subject to reporting biases. Some households may underreport deaths due to social stigma or lack of knowledge, while others may misclassify child deaths by age category. Although these errors are unlikely to be correlated with treatment assignment, they nonetheless introduce a degree of uncertainty.

Fourth, the external validity of the findings, while promising, is potentially limited by the unique features of Elgeyo-Marakwet County. This region has relatively high political stability, a functional county government, and a prior history of participatory budgeting. Counties with weaker governance structures, more conflict, or entrenched elite capture may face greater barriers to implementation and may not experience the same outcomes.

Fifth, our design focused on village-level outcomes and did not track individual-level behavioral changes beyond reported satisfaction and engagement. It remains unclear whether the observed health improvements were driven by specific household behaviors (e.g., boiling water, attending clinics) or broader environmental changes enabled by the public goods selected. Understanding the micro-pathways of change would allow for more precise targeting of future interventions.

Broader Implications for Local Democracy and Development

Despite these limitations, the findings of this study resonate far beyond health outcomes. They offer important insights into the potential for participatory institutions to revitalize local democracy, especially in low- and middle-income countries grappling with trust deficits, resource constraints, and citizen disengagement.

One of the most striking results is the alignment between improved outcomes and improved perceptions of government fairness and responsiveness. Villages that engaged in deliberation or voting were not only healthier, but also more trusting, cooperative, and hopeful about future government action. These psychological and social shifts are crucial for sustaining democratic institutions. They suggest that effective participation can generate both instrumental and intrinsic value—it can "work" and feel worth doing.
Moreover, this study supports the idea that participation is a capability, not just a right or a means to an end. As Amartya Sen (1999) and others have argued, development should be judged by the extent to which people can shape their own lives and communities. Structured, inclusive participatory budgeting gives people a chance to learn, deliberate, decide, and act together—deepening the fabric of citizenship itself.

From a governance perspective, the study challenges a common assumption in development practice: that service delivery and democracy are separate spheres or even competing priorities. On the contrary, these findings suggest that democratic processes can be powerful vehicles for improving services—when they are designed with care and implemented with rigor.

Finally, this study highlights the importance of design choices. Participation is not a binary variable—it exists in forms, degrees, and qualities. The move from consultation to voting to deliberation was not just a shift in method, but a shift in meaning. It

reflected a deepening of trust, a redistribution of power, and a transformation of how people engage with the state. Policymakers should be attentive to these nuances and resist the temptation to treat "citizen input" as a checkbox or token gesture.

Future Research Directions

This study opens several avenues for future investigation. First, there is a need to **track long-term outcomes**, both in terms of health impacts and institutional resilience. Do the gains observed here persist over time? Does community engagement increase with repeated exposure to participatory processes?

Second, researchers should explore **scaling strategies**, including hybrid models that combine voting with elements of deliberation, or digital innovations that lower the cost of facilitation. Comparative studies across counties or countries could test the robustness of these findings in different contexts.

Third, future work should investigate the **political economy of participatory budgeting**—how elites respond to increased citizen influence, how bureaucratic incentives shape implementation, and how PB interacts with party politics or ethnic dynamics. Understanding these forces is key to sustaining reform.

Fourth, mixed-method approaches could deepen understanding of **mechanisms and experiences**—how people feel during deliberation, what they learn, how power is negotiated, and which voices are amplified or silenced. Ethnographic, narrative, or feminist approaches could shed light on these dimensions.

Finally, as global attention shifts toward **climate resilience, digital governance, and health systems strengthening**, participatory models like the one studied here may have new relevance. Embedding structured participation in broader development strategies could unlock synergies and improve not only outcomes, but also the legitimacy and adaptability of public institutions.

Conclusion

This study provides rare and rigorous experimental evidence that participatory governance—when thoughtfully designed and faithfully implemented—can yield meaningful improvements in public health and democratic legitimacy (Touchton & Wampler, 2023; Wampler et al., 2021). By comparing three models of community-based decision-making in the rural counties of Elgeyo-Marakwet, Kenya, we show that structured public participation can reduce infant mortality, improve perceptions of government fairness, and foster civic engagement (Gonçalves, 2014; Mansuri & Rao, 2012).

Among the most compelling findings is the differential impact of participatory formats. While all forms of citizen input outperformed the control group, villages exposed to voting and especially deliberation experienced the largest gains (Grillos, 2022; Collins, 2021). These results underscore a critical insight: how citizens participate matters (Fung, 2006; Arnstein, 1969). Simple consultation mechanisms, while politically convenient, do not unlock the full potential of citizen voice. Voting and deliberation—by empowering residents to shape decisions directly—generate deeper ownership, greater trust, and better-targeted investments in public goods (Baiocchi et al., 2011; Habermas, 1996).

The study also contributes to broader debates on the role of democratic institutions in development. In contexts where state capacity is uneven and resources are scarce, participatory budgeting offers a viable pathway to improve not only service delivery but also citizen–state relations (Abers, 2000; Avritzer, 2010). Importantly, these improvements are not just symbolic. A 22–29% reduction in infant mortality represents a profound shift in the lived experience of communities and a measurable return on modest financial investment (Touchton & Wampler, 2014; Olken, 2010).

These findings carry important implications for policymakers and development practitioners. First, they point to the need for greater ambition in participatory design. Governments, donors, and civil society actors

should move beyond checkbox approaches and invest in structured, inclusive mechanisms—especially deliberation—that build social capital, generate better decisions, and enhance procedural fairness (Farrar et al., 2010; Landemore, 2017).

Second, the results provide a blueprint for scaling successful models. Kenya's legal framework, civil society infrastructure, and political openness make it a promising site for expanding participatory budgeting across counties (Rwigi et al., 2020; Cheeseman et al., 2020). Elsewhere, governments can adapt these lessons to fit their institutional environments, recognizing that flexibility and local ownership are key (Cabannes & Lipietz, 2018; Shah, 2007).

Third, the study reinforces the importance of monitoring and evaluation in democratic innovation. Participatory institutions should not be adopted on faith alone; they must be assessed, refined, and adapted based on empirical evidence and community feedback (Mansuri & Rao, 2012; Agrawal & Gupta, 2005). The success of this project was due in part to the collaboration between researchers, implementers, and local government—a model that others would do well to replicate (Beath et al., 2017; Humphreys et al., 2006).

Finally, beyond its immediate policy implications, this study affirms a more hopeful view of democracy. Even in contexts marked by poverty, inequality, and fragile institutions, citizens are capable of exercising agency, reasoning together, and shaping the public good (Sen, 1999; Nussbaum, 2011). Participation is not a luxury—it is a foundation for inclusive development and accountable governance (Fung & Wright, 2001; Heller & Rao, 2015).

As the global development community grapples with questions of legitimacy, resilience, and reform, the lessons from this project are clear: local democracy, when designed for equity and deliberation, can save lives—and build stronger societies in the process (Touchton et al., 2017; Wampler, 2007).

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