



Funding Utilization and Service Delivery Outcomes: Assessing the Role of NGOs in HIV and TB Management in Westlands Sub-County, Nairobi, Kenya

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Abstract

This study was conducted to assess the influence of NGO funding utilization on the effectiveness of HIV and tuberculosis (TB) service delivery in Westlands Sub-County, Nairobi, Kenya. HIV and TB remain significant public health challenges in Kenya, with NGOs playing a pivotal role in bridging gaps in healthcare provision. The research employed a mixed-methods descriptive survey design, targeting HIV and TB patients, healthcare providers, and NGO staff. A stratified random sampling technique was used to select 400 respondents from a target population of 38490. Data were collected through structured questionnaires, semi-structured interviews, and document reviews. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were subjected to thematic analysis. Findings revealed that NGO funding utilization significantly improved accessibility to HIV/TB services, enhanced treatment adherence, and strengthened collaboration with local health systems. However, the study also identified critical challenges, including donor dependency, limited financial sustainability, and inadequate integration of NGO-funded initiatives into government-led health strategies. Overall, the results indicate that while NGO funding remains central to HIV/TB service delivery in resource-constrained settings, long-term impact requires improved coordination, diversified funding models, and capacity strengthening of local health systems. The study recommends a multi-sectoral approach to ensure sustainability and effectiveness in addressing HIV and TB within urban populations.

Keywords: *HIV Management; Kenya; NGO Funding; Sustainability; Tuberculosis Service Delivery*

I. INTRODUCTION

HIV and tuberculosis (TB) continue to pose significant public health threats worldwide, with disproportionate impacts in low- and middle-income countries (LMICs). Sub-Saharan Africa carries the highest burden, with the two diseases ranking among the leading causes of morbidity and mortality. According to the World Health Organization (2023), Kenya is listed among the 30 high-burden countries for both HIV and TB, recording approximately 1.4 million people living with HIV and more than 140,000 new TB cases annually. The dual epidemic not only increases health-related suffering but also exerts immense strain on the health system, which struggles with limited resources, workforce shortages, and infrastructural gaps.

Non-governmental organizations (NGOs) have historically played a vital role in complementing government efforts in HIV and TB control in Kenya. They mobilize donor resources, enhance health system infrastructure, provide community-based care, and engage in advocacy and awareness campaigns (UNAIDS, 2022). NGO interventions have been particularly critical in urban areas such as Nairobi County, where rapid population growth, socio-economic inequalities, and high mobility complicate service delivery. Despite these contributions, concerns remain regarding the efficiency, equity, and sustainability of NGO funding utilization in the management of HIV and TB.

The relevance of examining NGO funding utilization can be understood through several theoretical perspectives. Resource Dependency Theory (Pfeffer & Salancik, 2003) suggests that organizations reliant on external donor resources are vulnerable to changing funding flows, which may threaten program continuity. Stakeholder Theory (Freeman, 2010) emphasizes inclusive engagement of beneficiaries, providers, and funders to ensure transparency and accountability in service delivery. Furthermore, Systems Theory underscores the interdependence of health system components, where gaps in one area, such as financing, can affect the overall performance of the HIV/TB response.

Empirical evidence from sub-Saharan Africa indicates that donor and NGO funding has contributed to expanded treatment coverage, reduced HIV-related mortality, and improved TB case detection (Mabachi et al., 2019; Oleribe et al., 2020). However, studies also highlight persistent challenges, including donor dependency, fragmentation of services, limited integration into government-led health strategies, and weak local capacity-building (Piot et al., 2015; Zakumumpa et al., 2021). These issues raise critical questions about whether funding utilization strategies are aligned with long-term health system strengthening and whether they can withstand reductions in donor support.

In Nairobi County, HIV prevalence is higher than the national average, while TB remains a significant co-infection challenge (NACC, 2022). Within Westlands Sub-County, NGOs provide substantial financial and technical support to HIV/TB programs, yet systematic assessments of how effectively these funds are utilized remain limited. Understanding the influence of NGO funding on service delivery effectiveness is vital for shaping policies that enhance sustainability, coordination, and impact. This study therefore investigates the influence of NGO funding utilization on the effectiveness of HIV and TB service delivery in Westlands Sub-County, Nairobi, Kenya. It focuses on how financial allocation, resource management, and collaborative practices affect access to services, treatment outcomes, and long-term sustainability. Findings are expected to contribute to evidence-based policy formulation, improved donor engagement

NEED OF THE STUDY.

The need for this study arises from the persistent burden of HIV and tuberculosis (TB) in Kenya, particularly in urban areas such as Nairobi County, where health systems face growing demand and limited resources (WHO, 2023; UNAIDS, 2023). In Westlands Sub-County, sustaining effective HIV and TB service delivery remains challenging despite the substantial involvement of non-governmental organizations (NGOs). While NGOs have mobilized donor resources and expanded access to care, concerns persist regarding the efficiency, accountability, and long-term sustainability of funding utilization (NACC, 2022; Zakumumpa et al., 2021). Existing evidence shows that NGO-funded interventions have improved treatment coverage, strengthened diagnostic capacity, and enhanced community outreach; however, heavy reliance on external donor resources exposes programs to risks of fragmentation, duplication, and vulnerability to funding fluctuations (PEPFAR, 2023; Global Fund, 2022). Previous assessments of HIV and TB programs in Kenya have largely emphasized epidemiological outcomes, such as prevalence, incidence, and mortality, with limited focus on how resource allocation and utilization influence program effectiveness at the sub-county level (KEMRI, 2023; Muriithi & Wekesa, 2021). This gap makes it difficult to determine whether current funding strategies are aligned with long-term health system strengthening and sustainability. Accordingly, this study is essential in assessing how NGO funding utilization influences HIV and TB service delivery in Westlands Sub-County. By identifying strengths, weaknesses, and challenges in donor resource use, the research aims to generate evidence-based recommendations to improve coordination, accountability, and sustainability. A clearer understanding of these dynamics is critical not only for policymakers and NGOs but also for ensuring that HIV and TB patients in resource-constrained urban settings continue to access reliable, equitable, and effective care (Waweru et al., 2020; Otieno & Githinji, 2022)..

3.1 Population and Sample

Westlands Sub-County in Nairobi, Kenya, was considered the universe of this study owing to its high burden of HIV and tuberculosis (TB), socio-economic diversity, and the critical role played by non-governmental organizations (NGOs) in supplementing government health services. The sub-county contains both affluent neighborhoods and densely populated informal settlements such as Kangemi, Kibagare, and Deep Sea, where healthcare access remains constrained and health inequities are pronounced (National AIDS Control Council [NACC], 2022; Kenya Medical Research Institute [KEMRI], 2023). This urban diversity made Westlands Sub-County an appropriate site for assessing the impact of NGO funding utilization on HIV/TB service delivery, equity of access, and sustainability of interventions.

The study population included key stakeholders directly engaged in HIV and TB management in the sub-county. These comprised people living with HIV and TB (PLHIV/TB patients), healthcare providers in both public and NGO-supported facilities, and NGO staff involved in program design, implementation, and monitoring. Patients were considered central units of analysis as primary beneficiaries of HIV/TB services, offering perspectives on access, treatment adherence, and service equity. Healthcare providers including doctors, nurses, community health workers, and laboratory personnel offered professional insights into service delivery, integration challenges, and resource constraints. NGO staff, including program officers, monitoring and evaluation specialists, and field coordinators, contributed organizational-level perspectives on funding allocation, accountability, and sustainability (UNAIDS, 2022; Zakumumpa et al., 2021).

From the broader target population, a purposive and stratified sample of 38490 participants was established, out of which 400 respondents were selected to participate in the study. Stratification ensured balanced representation across stakeholder categories: 364 PLHIV, 29 TB patients, 5 healthcare providers, 1 NGO staff and 1 Local Government Representative. The stratified random sampling approach enhanced the credibility and representativeness of findings by capturing diverse experiences across multiple stakeholder groups (Mugenda & Mugenda, 2019; Creswell & Creswell, 2023). This sampling framework allowed for comparative analysis across patient, provider, and organizational perspectives, ensuring a holistic understanding of how NGO funding utilization translates into health outcomes in a dynamic urban setting like Westlands Sub-County.

Table 3.1: Target Population and Sample Distribution

Stakeholder Category	Target Population (N = 210)	Study Sample (n = 150)
PLHIV	35000	364
TB Patients	2800	29
Healthcare Providers	450	5
NGO Staff	200	1
Local Government Representatives	40	1
Total	38490	400

Note. PLHIV = People Living with HIV; TB = Tuberculosis. Stratified random sampling ensured balanced representation across groups.

3.2 Data and Sources of Data

This study relied on both primary and secondary data sources to generate comprehensive insights into HIV and TB management in Westlands Sub-County. The primary data were collected through structured questionnaires and semi-structured interview guides, adapted from validated instruments used in similar HIV/TB program evaluations (Kanyina, 2020; Ndung'u et al., 2020). The questionnaire comprised three major sections: (a) socio-demographic characteristics of respondents, (b) healthcare facility and organizational information, and (c) programmatic domains including service delivery, funding utilization, resource allocation, and sustainability strategies. The instrument utilized both closed- and open-ended questions, with Likert-scale items designed to capture perceptions of effectiveness, equity, and collaboration in service delivery. To ensure validity, the tool was reviewed by subject experts, and a pilot study was conducted in a neighboring sub-county to test reliability and feasibility (Tadesse et al., 2022).

In addition, secondary data were obtained from published reports, government policy documents, and NGO program evaluations. These included the Kenya AIDS Strategic Framework II (2023–2027), the National TB Strategic Plan, and key reports from UNAIDS (2023), WHO (2023), and the Kenya Medical Research Institute (KEMRI, 2023). Such secondary sources provided epidemiological trends, service coverage data, and financial allocation reports that contextualized the primary data. Ethical approval was secured from the Institutional Research Ethics Committee (IREC) at Great Lakes University of Kisumu and clearance from the Nairobi County Health Department, ensuring adherence to national and international research ethics guidelines (WHO, 2022). Trained research assistants, fluent in both English and Kiswahili, administered the tools to HIV/TB patients, healthcare providers, and NGO staff, enhancing inclusivity and response accuracy.

3.3 Theoretical framework

This study is anchored on three interrelated theoretical frameworks, Resource Dependency Theory (RDT), Health Systems Theory (HST), and Stakeholder Theory (ST), which collectively provide a multidimensional understanding of how NGO funding influences HIV and TB management in resource-constrained urban settings. Resource Dependency Theory (Pfeffer & Salancik, 1978) posits that organizations depend on external resources for survival, shaping their strategies, autonomy, and sustainability; in this study, it helps to explain how NGOs' reliance on donor funding affects program continuity, flexibility, and accountability. Health Systems Theory (WHO, 2007), which conceptualizes healthcare as comprising six interconnected building blocks service delivery, health workforce, information systems, access to medicines, financing, and governance guides the evaluation of whether NGO funding in Westlands Sub-County strengthens integration within the broader health system or contributes to fragmented, parallel structures (Kinyanjui et al., 2020). Complementing these, Stakeholder Theory (Freeman, 1984) underscores the importance of engaging multiple actors—including patients, NGOs, healthcare providers, government agencies, and communities in decision-making processes, providing a framework for assessing accountability, inclusivity, and sustainable partnerships in NGO-funded programs (Waweru et al., 2020). Together, these theories offer a robust analytical lens: RDT highlights risks of donor dependency, HST frames system-level integration, and ST emphasizes participatory governance, enabling a comprehensive exploration of how funding utilization, service distribution, and collaborative practices shape the effectiveness, equity, and sustainability of HIV/TB interventions in Westlands Sub-County.

RESEARCH METHODOLOGY

This chapter presents the methodological framework employed in the study, outlining the procedures used to achieve the research objectives. It describes the population and sampling design, sources of data, and the theoretical framework guiding the analysis. The methodology ensures a systematic and rigorous approach to assessing the impact of NGO funding on HIV and TB management in Westlands Sub-County, while also ensuring validity, reliability, and ethical integrity throughout the research process.

3.1 Population and Sample

Westlands Sub-County in Nairobi, Kenya, was selected as the study site due to its high HIV and TB burden, diverse urban population, and the significant role played by non-governmental organizations (NGOs) in supplementing public health service delivery. The sub-county is home to both affluent residential areas and densely populated informal settlements such as Deep Sea, Kangemi, and Kaptagat, where health disparities are most pronounced (NACC, 2022; WHO, 2023). These features make it an ideal microcosm for examining how NGO funding influences equity and sustainability in service delivery.

The study population comprised four primary stakeholder groups directly engaged in HIV and TB management: (i) people living with HIV and TB (PLHIV/TB patients) as direct service beneficiaries, (ii) healthcare providers working in both public and NGO-supported facilities, (iii) NGO staff responsible for program implementation and management, and (iv) local government health representatives overseeing coordination and policy implementation. These groups were selected because they represent critical actors in both the provision and utilization of HIV/TB services (UNAIDS, 2022; Zakumumpa et al., 2021).

From this universe, a target population of 38490 individuals was identified across the stakeholder categories. Using purposive and stratified sampling, a total of 400 respondents were selected to ensure balanced representation of patients, healthcare workers, NGO personnel, and government officials. Stratification allowed the inclusion of diverse perspectives, while purposive sampling ensured that respondents possessed the relevant knowledge and experience to provide reliable insights. This sampling design facilitated a holistic understanding of how NGO funding is allocated, managed, and experienced across different levels of the health system (Mugenda & Mugenda, 2019; Creswell & Creswell, 2023).

3.2 Data and Sources of Data

The study utilized both primary and secondary data sources to provide a comprehensive perspective on the role of NGO funding in HIV and TB management.

Primary data were collected using structured questionnaires and semi-structured interviews. The questionnaire, adapted from Kanyina's (2020) work on health program evaluations, was tailored to capture socio-demographic details, organizational characteristics, and programmatic dimensions such as funding utilization, service delivery, equity of access, and sustainability. Likert-scale items were included to measure perceptions of service effectiveness, collaboration, and integration. Semi-structured interviews were conducted with key stakeholders, including NGO managers and local health officials, to gain deeper insights into funding priorities, coordination challenges, and sustainability strategies. A pilot test was conducted in a neighboring sub-county to assess the reliability and validity of the tools (Tadesse et al., 2022).

Secondary data were obtained from official policy documents, national health reports, and NGO program records. Key sources included the Kenya AIDS Strategic Framework II (2023–2027), the National TB Strategic Plan, reports from UNAIDS (2023), WHO (2023), the Kenya Medical Research Institute (KEMRI, 2023), and NGO annual program evaluations. These sources provided epidemiological trends, funding allocation data, and service coverage statistics, thereby situating the primary findings within broader national and global contexts.

Ethical clearance was obtained from the Institutional Research Ethics Committee (IREC) at Great Lakes University of Kisumu and from the Nairobi County Health Department, in compliance with both national and international guidelines (WHO, 2022). Trained research assistants fluent in English and Kiswahili facilitated data collection, ensuring inclusivity and minimizing language barriers.

3.4 Statistical Tools and Econometric Models

Data analysis combined **descriptive, inferential, and multilevel techniques** to generate robust findings.

3.4.1 Descriptive Statistics

Descriptive statistics, including frequencies, means, and standard deviations, were used to summarize socio-demographic characteristics, facility profiles, and NGO-funded program activities. These provided an overview of service coverage, resource allocation, and stakeholder involvement. Tests for normality (Shapiro-Wilk and Kolmogorov–Smirnov) guided the choice of parametric or non-parametric methods (Ghasemi & Zahediasl, 2012).

3.4.2 Binary Logistic Regression Model

A binary logistic regression model was applied to assess factors associated with effective HIV/TB program outcomes. The dependent variable was coded as adequate effectiveness (1) versus inadequate effectiveness (0). Predictor variables included facility type, NGO involvement, funding sufficiency, staff training, and patient access indicators. The model took the form:

$$\log(P/(1-P)) = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n + \varepsilon$$

Where P = probability of adequate program effectiveness, $X_1 \dots X_n$ = predictor variables, and ε = error term. Model fit was evaluated using the Hosmer–Lemeshow test, and explanatory power was estimated with Nagelkerke's R^2 (Hosmer et al., 2013).

3.4.3 Chi-Square and Fisher's Exact Tests

Associations between categorical variables (e.g., facility ownership, NGO partnership status, service accessibility) and program effectiveness were tested using Chi-square. Fisher's exact test was applied when expected frequencies were small (McHugh, 2013).

3.4.4 Multilevel Modeling (Hierarchical Linear Models)

Given the nested data structure (patients and providers within facilities), multilevel logistic regression was employed to account for intra-facility correlations and to distinguish individual-level from institutional-level influences on outcomes (Snijders & Bosker, 2012).

3.4.5 Model Diagnostics and Validation

Model robustness was evaluated using the Variance Inflation Factor (VIF) for multicollinearity (O'Brien, 2007), Receiver Operating Characteristic (ROC) curves and Area Under the Curve (AUC) for discrimination ability (Mandrekar, 2010), and Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) for model comparison.

IV. RESULTS AND DISCUSSION

4.3 Influence of NGO Funding Utilization on the Effectiveness of HIV and TB Service Delivery

This section presents the empirical findings on how NGO funding utilization shaped HIV and TB service delivery outcomes in Westlands Sub-County. The analysis employed a multivariate framework, combining normality diagnostics, correlation analysis, and Partial Least Squares Regression (PLSR), to evaluate the relationships between programmatic interventions Mobile Testing, Subsidies, Outreach, Training, PLHIV Support, and Home-Based Care and five treatment-related outcomes: Increased Treatment, Reduced Cases, Patient Trust, Enhanced Awareness, and Health System Capacity.

4.3.1 Diagnostics

Preliminary diagnostics were conducted to confirm the suitability of data for multivariate modeling. Shapiro–Wilk tests indicated minor deviations from normality across some variables, but these were not severe enough to compromise the reliability of inferential analysis. Similarly, Mahalanobis Q–Q plots demonstrated that observed Mahalanobis distances aligned closely with theoretical chi-square quantiles, suggesting that the joint distribution of the data approximated multivariate normality. Given its

robustness to moderate deviations from normality, PLSR was deemed appropriate for modeling the interrelationships between interventions and outcomes (Tabachnick & Fidell, 2019).

4.3.2 Correlation Analysis

Spearman's rank-order correlation, adjusted using the false discovery rate (FDR), was used to explore monotonic associations between interventions and outcomes. Overall, the correlations were weak ($-0.18 \leq \rho \leq 0.15$), yet they revealed notable patterns. Training ($\rho = 0.13$) and Home-Based Care ($\rho = 0.11$) were positively correlated with Increased Treatment, suggesting that capacity building and individualized patient support modestly contributed to treatment uptake. Mobile Testing showed a weak positive correlation with Enhanced Awareness ($\rho = 0.12$), highlighting its potential role in expanding knowledge and encouraging health-seeking behavior. Conversely, Reduced Cases was negatively correlated with Home-Based Care ($\rho = -0.18$), while Patient Trust displayed a marginally negative correlation with Subsidies ($\rho = -0.04$). Although none of these associations were statistically significant, the patterns align with prior studies emphasizing that program effectiveness depends on multi-component, contextually adapted interventions rather than isolated strategies (Ndung'u et al., 2020; Patel et al., 2021).

4.3.3 Partial Least Squares Regression

To assess the combined influence of all interventions on multiple outcomes, Partial Least Squares Regression was applied. Variable Importance in Projection (VIP) scores indicated that PLHIV Support (VIP = 1.13), Home-Based Care (VIP = 1.08), Subsidies (VIP = 1.05), and Outreach (VIP = 1.04) were the most influential predictors, exceeding the conventional threshold of 1.0 (Hair et al., 2019). Mobile Testing (VIP = 0.81) and Training (VIP = 0.76) had lower relative importance, suggesting that while beneficial, their isolated impact was limited compared to other interventions.

Table 4.2: Partial Least Squares Regression Results for NGO Program Interventions and HIV/TB Outcomes

Intervention	Increased Treatment	Reduced Cases	Patient Trust	Enhanced Awareness	Health Capacity / VIP Score
PLHIV Support	0.0303	0.1251	0.0742	0.0226	-0.0211 / 1.13
Home-Based Care	-0.0239	-0.0110	-0.1301	-0.0394	-0.0376 / 1.08
Subsidies	-0.0574	-0.0787	0.0719	-0.0771	0.0138 / 1.05
Outreach	0.0206	-0.1270	0.0624	-0.0059	-0.0224 / 1.04
Mobile Testing	0.0731	-0.0196	-0.0511	0.0379	0.0551 / 0.81
Training	0.1500	-0.1391	-0.1400	0.0048	-0.0541 / 0.76

4.3.4 Discussion of Findings

The regression results underscore that no single NGO-funded intervention strongly predicted outcomes in isolation; rather, their joint contribution appeared more meaningful. Interventions such as PLHIV Support and Outreach contributed positively to treatment coverage and patient engagement, consistent with evidence that community-based support enhances adherence and continuity of care (Muluye et al., 2017). However, the negative association between Home-Based Care and Patient Trust suggests implementation challenges, possibly linked to inconsistent follow-up or limited integration with facility-based care.

Overall, the findings affirm that NGO-funded HIV/TB interventions in Westlands Sub-County exert modest but multidimensional effects. While funding utilization has enabled expanded access and strengthened service delivery, sustainability and long-term impact will depend on integrated, multi-sectoral approaches that reduce donor dependency and strengthen alignment with county health systems (Okechukwu et al., 2020; WHO, 2022).

4.2 Summary of Findings and Interpretation

The findings reveal that while no single intervention independently exerted a strong predictive effect on HIV/TB outcomes, several interventions demonstrated modest yet complementary influences. Specifically, PLHIV Support was associated with positive effects on Reduced Cases ($\beta = 0.1251$) and Patient Trust ($\beta = 0.0742$), while Training showed a positive relationship with Increased Treatment ($\beta = 0.1500$). Although these coefficients were relatively small, the Variable Importance in Projection (VIP) scores identified PLHIV Support, Home-Based Care, Subsidies, and Outreach as collectively influential, underscoring the value of integrated, multifactorial strategies. These findings are consistent with prior evidence: Muluye et al. (2017) showed that community-based programs improved adherence only when paired with health worker training; Ndung'u et al. (2020) highlighted

4.3 Implications and Recommendations

The findings underscore the need for integrated and sustainable strategies to strengthen HIV and TB service delivery in Westlands Sub-County. To enhance program effectiveness, routine and standardized training for healthcare workers should be scaled up to improve diagnosis, treatment, and patient-centered care, while investments in infrastructure and supply chains are essential to guarantee reliable access to diagnostics and medicines. Establishing sustainable financing mechanisms, including buffer stocks and diversified funding models, will reduce donor dependency and ensure continuity of services. Equally important is the integration of NGO-funded interventions into government-led health systems through harmonized policies and shared monitoring frameworks, alongside stronger community engagement to expand outreach, reduce stigma, and improve equity of access.

particularly in underserved informal settlements. Collectively, these strategies provide a pathway toward more effective, accountable, and sustainable HIV/TB programs in resource-constrained urban contexts.

5. Conclusion

The study concludes that while NGO funding utilization has significantly contributed to improved access, treatment adherence, and health system support in the management of HIV and TB in Westlands Sub-County, challenges remain in ensuring sustainability, efficiency, and integration of services. The findings reveal that reliance on donor resources, limited coordination with public health structures, and uneven service coverage continue to undermine long-term program effectiveness. Addressing these gaps requires not only sustaining donor investments but also strengthening local health system capacity, diversifying funding streams, and institutionalizing collaborative governance mechanisms. Ultimately, achieving sustainable HIV and TB control in Westlands Sub-County will depend on integrated, multi-sectoral strategies that align NGO interventions with national and county health priorities, ensuring resilience and equity in service delivery.

II. ACKNOWLEDGMENT

The researcher wishes to extend sincere gratitude to the Ministry of Health, Republic of Kenya, for granting access to data and providing logistical support throughout the research process. Special appreciation is accorded to the healthcare providers, NGO staff, and patients in Westlands Sub-County who willingly shared their time, experiences, and perspectives, thereby making this study possible. The researcher also acknowledges with deep respect the mentorship, guidance, and supervision of Dr. Otwor, whose invaluable support was central to shaping and refining this work. In addition, heartfelt thanks are directed to academic mentors and colleagues at the Management University of Africa (MUA), whose constructive feedback and scholarly insights enriched the quality of the study. Finally, profound gratitude is extended to family and friends for their unwavering encouragement, patience, and moral support, which sustained the researcher throughout the journey of conducting and completing this work.

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