PRIMIX Progress Report

Evaluation of the Mix Payment System for Indonesia's Primary Care

Thursday, 23rd April 2026

PRIMIX Project Brief Introduction

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PRIMIX Research Question

Research Question	Specific Objective
1. System Design & Evolution How has Indonesia's blended primary care payment attributes (non-capitation, programmatic fund, and performance-based capitation) emerged, was designed, evolved over time, and how was each component integrated into the existing payment system?	[1.1] Map reform timelines and document integration designs. [1.2] Analyze policy intentions and institutional arrangements.
2. Uptake, Implementation & Effectiveness What factors become enablers and barriers to the uptake, implementation, and effectiveness of the blended payment on chronic disease management among providers, managers, and policymakers?	[2.1] Identify governance, political economy, and institutional factors. [2.2] Explore stakeholder experiences (policymakers, managers, providers). [2.3] Assess links between the payment framework and NCD control rates, SPM (Minimum Service Coverage), and KBK (P4P) Attainment
3. Disaggregation & Cross-comparison How do different organization (BLUD, non-BLUD, private) of blended payment arrangements relate to provider behavior and operational performance in chronic disease management?	[3.1] Analyze incentive distribution differences across organizational and geographic settings. [3.2] Compare behavior and financial responsiveness across contexts (BLUD vs. Non-BLUD).

Detailed Indicator for PRIMIX Quantitative Research Question (RQ2.3)

SPM (Minimum Service Coverage) for Health

- Regulated under Government Regulation No. 2 Year 2018 about Minimum Service Coverage
- Covers 12 basic health services to be conducted in Primary Health Care
  1. Maternal Health Services: Standardized (antenatal care).
  2. Maternal Health Services: Standardized by health workers.
  3. Newborn Health Services: Standardized (0-28 days).
  4. Toddler Health Services: Standardized (0-59 months).
  5. Primary Education Health Services: Health screening for school children.
  6. Productive Age Health Services: Health screening for ages 15-59.
  7. Elderly Health Services: Health screening for ages ≥60 years.
  8. Hypertension Health Services: Standardized.
  9. Diabetes Mellitus Health Services: Standardized.
  10. Health Services for People at Risk of HIV Infection: Pregnant women, TB patients, etc.
  11. Health Services for People with TB (Tuberculosis): Standardized.
  12. Health Services for People with Severe Mental Illness: Standardized.

KBK (Performance Based Financing)

- Regulated under National Health Insurance Regulation Number 7 Year 2019 about Guideline on Capitation Performance Based Financing on Primary Health Care
- Covers 3 indicators for PHC capitation reimbursement by the NIH (BPJS Kesehatan)

KBK Indicators Detail and Scoring System

Score	KBK Indicators		
	Contact Rate	Controlled Prolanis Patient Rate	Non Specialistic Referral Rate
	Weight : 40%	Weight: 10%	Weight: 50%
1	<140 ‰	< 3%	≥3%
2	140< x <145 ‰	3%< x <4%	2.5 < x < 3%
3	145< x <150 ‰	4%< x <5%	2 < x < 2,5 %
4	≥150‰	≥ 5%	<2%

% Capitation Paid according to PHC KBK Scoring Attainment

PHC Score Attainment	% Capitation Paid	
	Puskesmas (BLUD & Non BLUD)	Private Clinics
4	100%	100%
3 < x < 4	95%	97%
2 < x < 3	90%	96%
1 < x < 2	85%	95%

Addressing the Gap Between Financial Autonomy and Primary Care Performance

1. Expansion of KBK Performance Indicators

- **Global Mandate:** Strengthening Primary Health Care (PHC) is no longer just about access; it is about **efficiency and quality** to achieve Sustainable Development Goals (SDG 3).
- **The Indonesian Scale:** Managing >10,000 *Puskesmas* as the backbone of JKN, serving 270 million people.

2. PFM Reform and BLUD Expansion

- **The Problem:** Traditional public financial management (PFM) often acts as a bottleneck. Rigid budget cycles and limited revenue retention prevent *Puskesmas* from responding dynamically to local health needs.
- **The Result:** Sub-optimal service delivery, slow procurement of essential medicines, and limited innovation at the frontline.

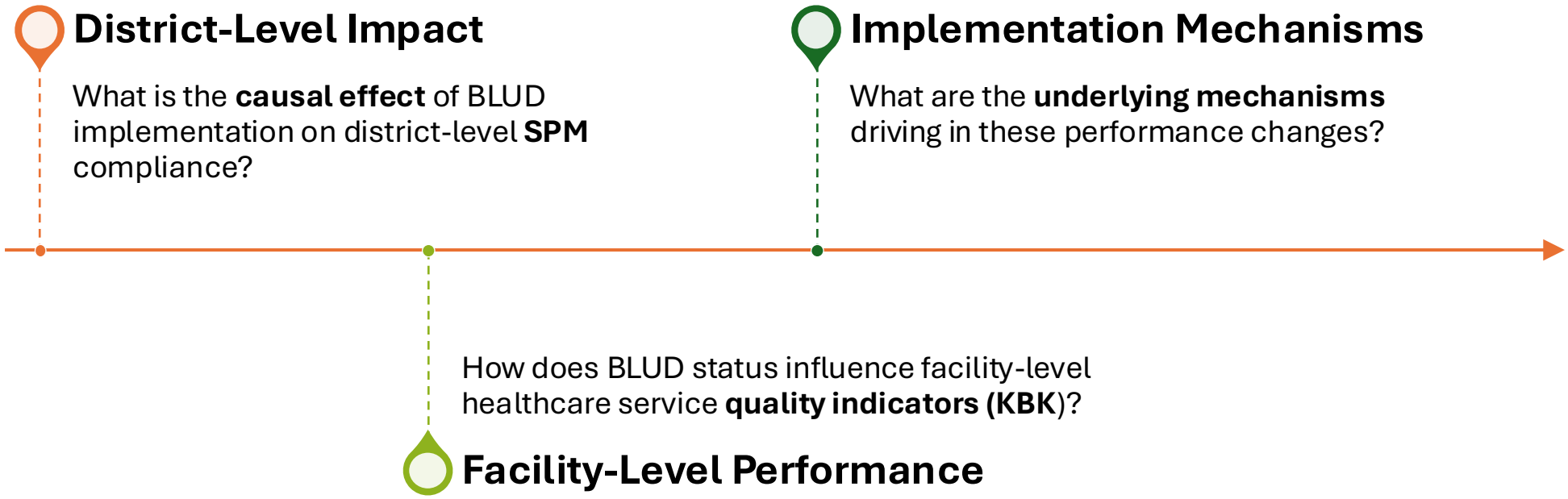
3. The Policy Innovation: BLUD Framework

- **The Catalyst:** Government Regulation (PP 23/2005) introduced **BLUD** to grant financial autonomy.
- **The Promise:** By allowing revenue retention and flexible budget execution, BLUD aims to transform *Puskesmas* from administrative units into **responsive health providers**.

4. The Evidence Gap (Why PRIMIX Matters)

- **The Missing Link:** While BLUD adoption is rising, **rigorous causal evidence** on whether this autonomy actually improves clinical outcomes (like SPM and KBK) remains scarce.
- **The Mission:** This study fills the gap by evaluating if financial flexibility translates into better health system performance.

Research Questions

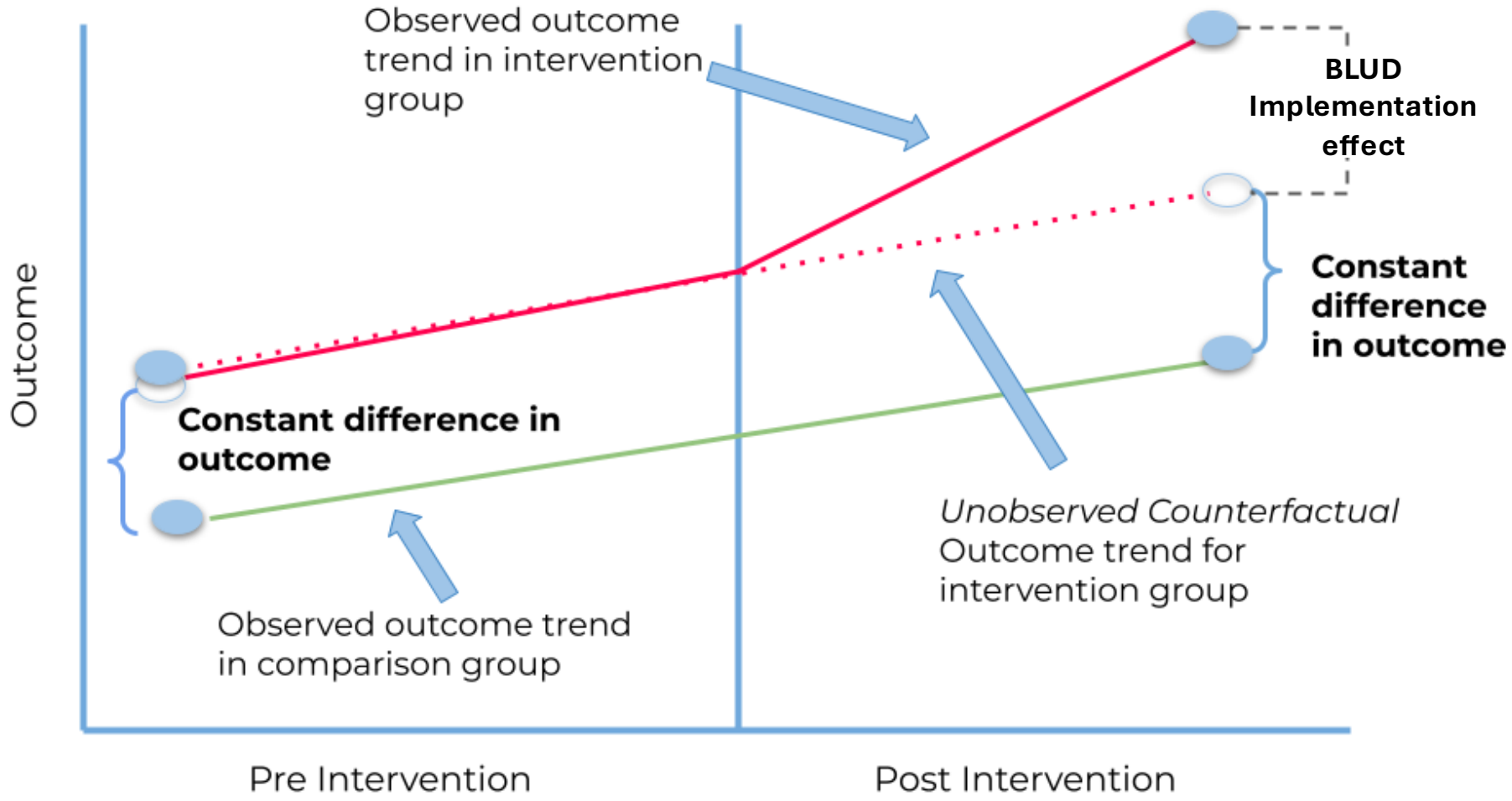


Goal: *Providing robust evidence to bridge the gap between financial autonomy and health outcomes.*

Identification Strategy

- **Study Design:** Staggered Difference-in-Differences (DiD) quasi-experimental study.
- **Treatment Variation:** Exploiting the temporal variation of ~4,000 *Puskesmas* transitioning to BLUD status between 2019 and 2024.
- **Econometric Rigor:**
  - Utilizing **Callaway-Sant'Anna (2021)** and **Sun-Abraham (2021)** estimators to address staggered adoption bias and heterogeneous treatment effects.
  - Models account for facility-level fixed effects, common time trends, and district-level heterogeneity.

Difference in Difference (DiD) Analysis



Data Source(1/3)– Performance Outcome

Variable	Definition & Measurement	Level	Source	Status
KBK Performance Score	Composite quality index (clinical process, patient safety, preventive care)	Facility	BPJS	Obtained
SPM Compliance Rate	District-aggregated proportion of mandated service standards achieved	District	MoH System	Discussion on access
Operational Efficiency	Patient visits per staff member per month	Facility	SIRS	Obtained
Service Utilization	Outpatient visits per 1,000 catchment population	Facility	SIRS & BPS	Obtained

Data Sources (2/3) – Treatment & Facility Characteristics

Variable	Definition	Level	Source	Status
BLUD Status	Binary indicator (0=No, 1=Yes) of implementation	Facility	MoH & MoHA	On progress with MoH
BLUD Penetration	Proportion of BLUD facilities within each district	District	Calculated	On progress with MoH
Staffing Level	Total health personnel (doctors, nurses, midwives)	Facility	SIRS	Obtained
Infrastructure Score	Index of equipment, building, and utility adequacy	Facility	SIRS Inventory	Obtained
Accreditation Status	MoH level (Basic, Intermediate, Advanced, Unaccredited)	Facility	MoH Registry	Not yet requested
Ownership & Geo	Government/Private; Urban/Rural classification	Facility	SIRS & BPS	Obtained

Data Sources (3/3) – District & Time Adjustments

Variable	Definition & Measurement	Level	Data Source	Status
Fiscal Capacity	District own-source revenue (PAD) per capita	District	Ministry of Finance & BPS	Not yet requested
Health Budget Share	Proportion of district budget allocated to health sector	District	District Budget Documents	Not yet requested
Population Density	Residents per square kilometer	District	BPS	Obtained
Poverty Rate	Population below poverty line (Susenas)	District	BPS	Obtained
Specialist Access	Specialist doctors per 100,000 population	District	DREAMS Registry & BPS	Obtained
Post-Implementation	Binary indicator for periods after BLUD adoption for each facility	Facility × Time	Calculated from implementation dates	On progress
COVID-19 Period	Binary indicator for pandemic (2020 Q1 - 2022 Q4)	Time	WHO Declaration	Obtained
Study Period	Quarterly time periods from 2019 Q1 to 2024 Q4	Time	Calendar	Obtained

Quantitative Interim Result

Early Impact Estimates of BLUD on Puskesmas Performance: A Staggered DiD Analysis

Thursday, 23rd April 2026

Analytical Sample Overview: Timing Group of BLUD Puskesmas

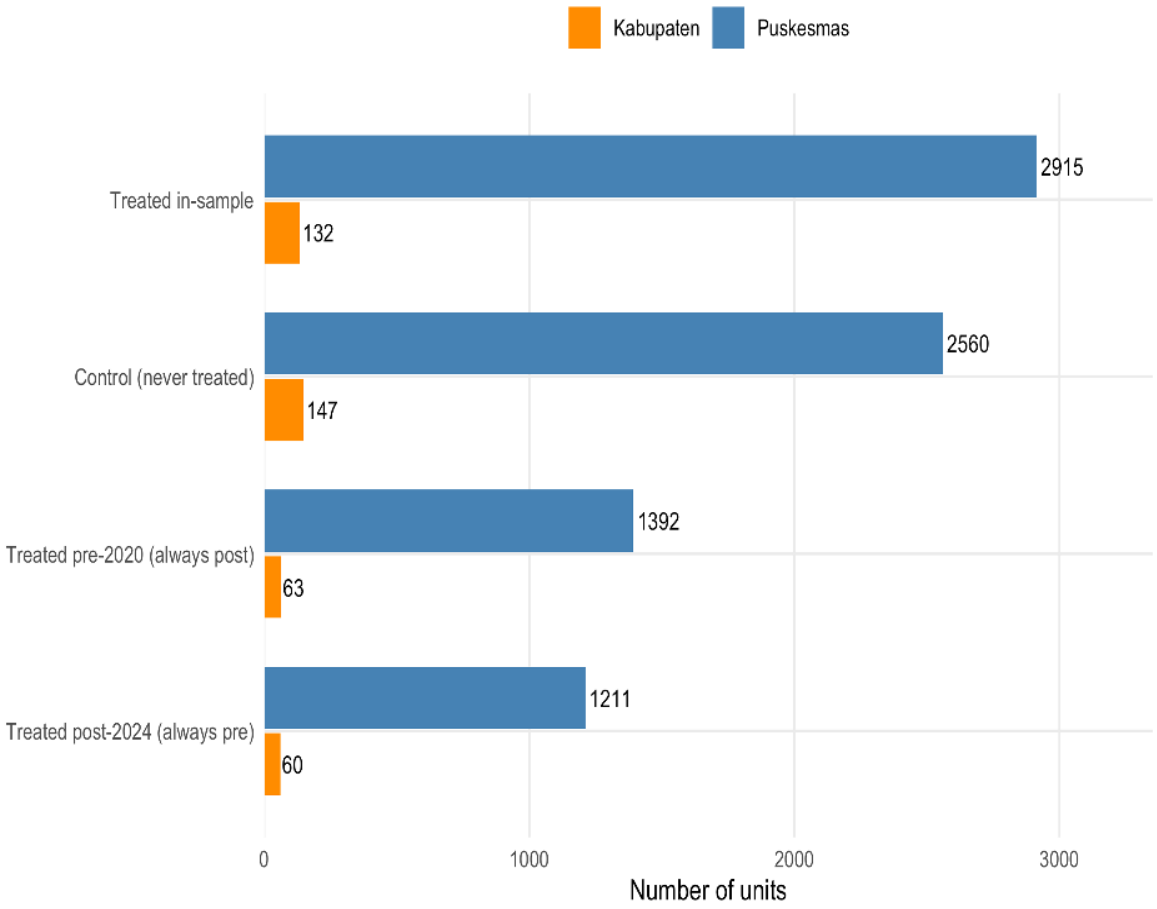


Figure 1: Timing groups by analytical level. Units treated before 2020 are excluded from estimation.

- **Massive Data Coverage:** Analyzed over **6,800 Puskesmas** and **400 Districts** nationwide.
- **Robust Analytical Sample:** * **2,915 Puskesmas** and **132 Districts** are identified as "Treated in-sample."
- Supported by a vast control group of **2,560 Puskesmas** and **147 Districts**.
- **Rigorous Filtering:** Applied strict exclusion criteria for pre-2020 and post-2024 cohorts to ensure "clean" causal estimation.
- **High Statistical Power:** The balanced distribution between treatment and control groups ensures high confidence in estimated impacts.

Analytical Sample Overview: Temporal Dynamics of BLUD Adoption

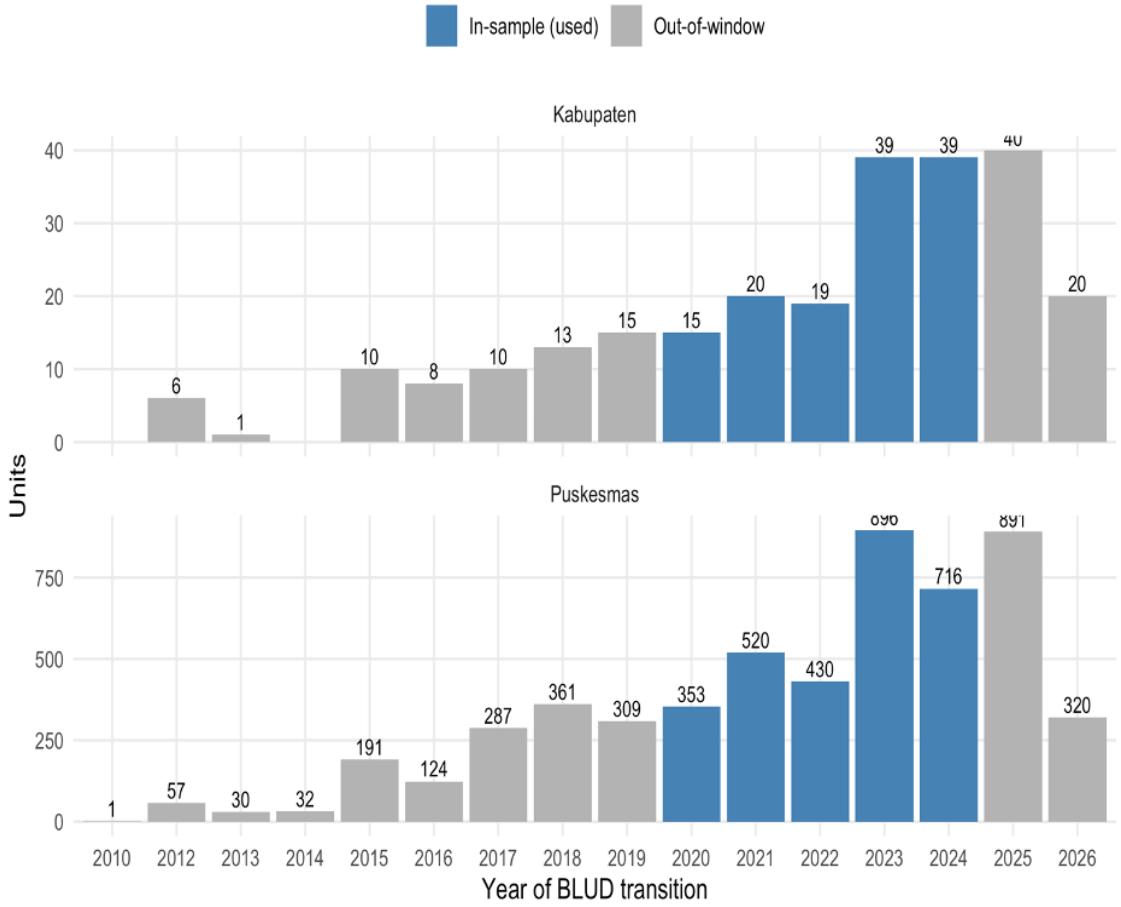


Figure 2: BLUD rollout: number of units transitioning to BLUD status each year among the analytical (confirmed-year) sample.

- **Staggered Adoption:** BLUD transitions occurred at different time points, with a significant surge observed between **2021 and 2024**.
- **Major 2023 Wave:** A peak adoption period occurred in 2023, involving over **800 Puskesmas** and nearly **40 Districts**.
- **Analytical Focus (In-sample):** The study focuses on the 2020–2024 window (represented by the blue bars) to ensure consistent data quality and policy relevance.
- **Methodological Necessity:** The staggered nature of the rollout justifies the use of the **Callaway-Sant'Anna estimator** to account for varied treatment timings and avoid bias.

Main Findings: Impact of BLUD Status

Estimated Average Treatment Effects (ATT) using Callaway-Sant'Anna Estimator

1. Facility Level (Puskesmas Performance)

- Total KBK Score: Significant increase of +0.1616 ($p < 0.001$). Financial autonomy leads to better administrative and quality compliance.
- Contact Rate (AK): Substantial improvement by +17.95 ($p = 0.016$), indicating higher service volume and patient engagement.
- Chronic Disease Management (RPPT): Significant rise by +0.0162 ($p < 0.001$), showing better clinical outcomes for chronic patients.
- Non-Specialized Referral (RRNS): No significant increase (+0.0592, $p = 0.49$), suggesting autonomy does not compromise referral quality.

2. District Level (Kabupaten/Kota Performance)

- Total KBK Score (District Average): Significant increase of +0.3156 ($p < 0.001$), showing even stronger systemic impact at the regional level.
- Chronic Disease Management (RPPT): Consistent significant gain of +0.0314 ($p < 0.001$).
- Contact Rate (AK): Positive trend at +18.00 ($p = 0.072$), aligning with facility-level results.

BLUD Impacts: Facility Level Analysis

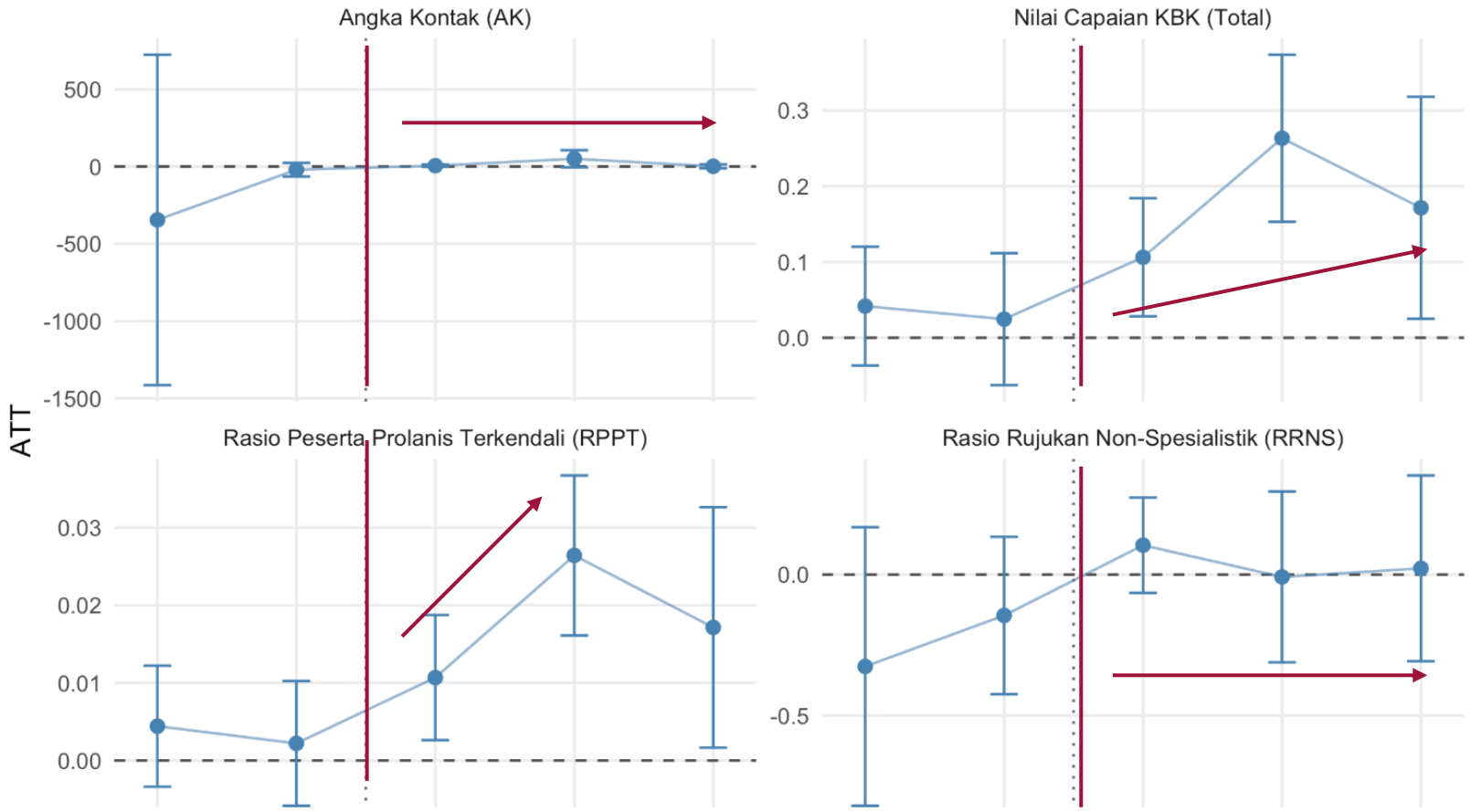


Figure 3: Event-study: effect of BLUD status on KBK indicators (Puskesmas). Event time 0 = year of BLUD transition. 95% CI.

- **Validated Pre-trends**
  Flat trajectories in Years -2 and -1 confirm that the parallel trends assumption holds..
- **Immediate Improvement:**
  Performance gains in **Total KBK Score** and **RPPT** begin immediately after the Puskesmas BLUD transition (Year 0).
- **Sustainable Growth**
  The positive impact continues to strengthen through Year 1 and Year 2, suggesting long-term institutional benefits.

Dynamic Impacts: District Level Analysis

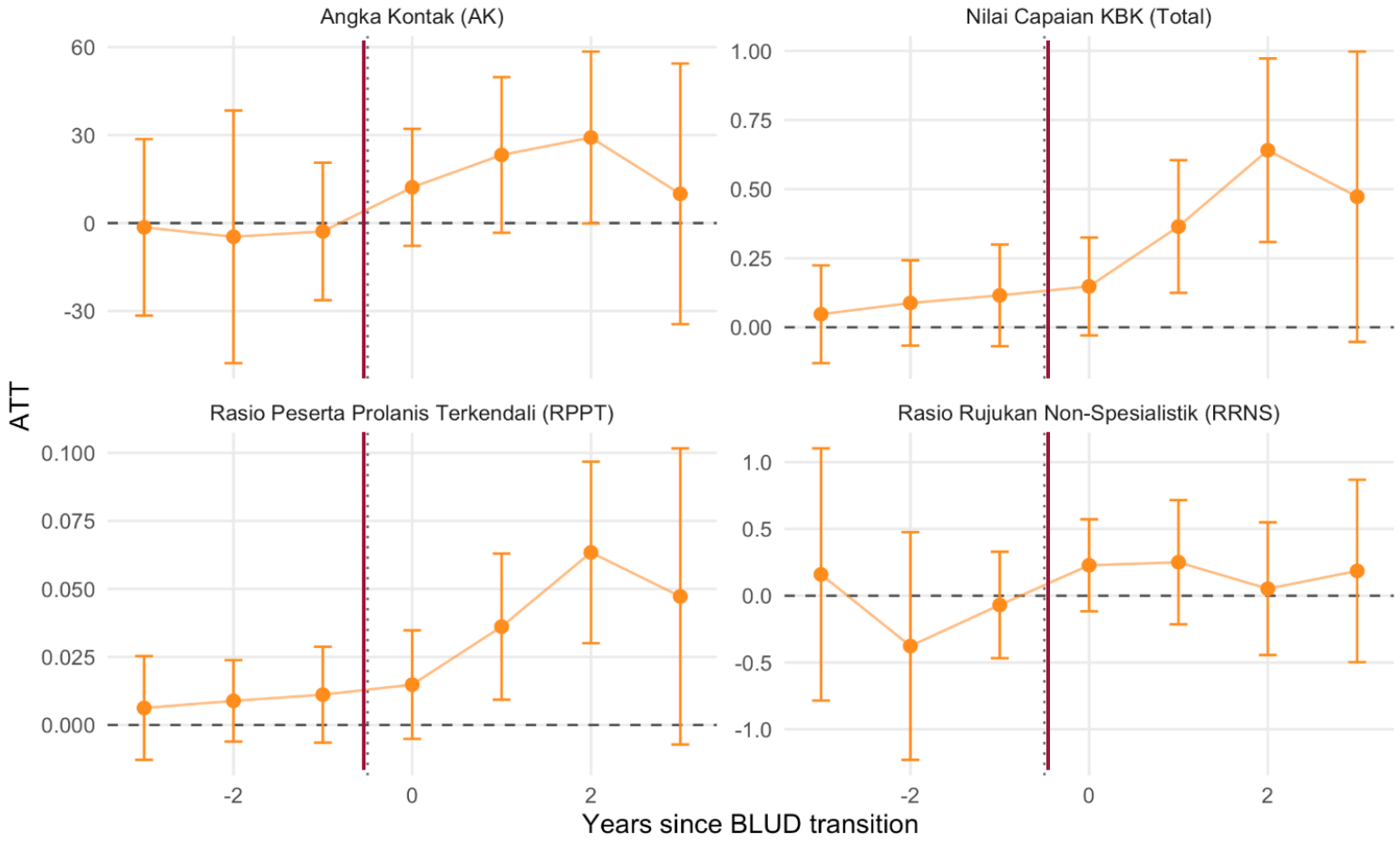


Figure 4: Event-study: effect of BLUD status on KBK indicators (Kabupaten). 95% CI.

- **Systemic Robustness:** The upward trend at the district level mirrors the facility-level findings, confirming the policy's broad effectiveness across the region.
- **Reliable Identification:** Consistent flat pre-trends across all district indicators reinforce the validity of the model.
- **Regional Impact:** Significant improvements in aggregate **KBK** and **RPPT** demonstrate a positive shift in the overall regional health system performance.

Plan B, Concern on Data Quality

Data Quality Concern	Mitigation
SPM is self reported by health facility, concern on data fidelity	• Flag rounding number on SPM reports • Stratify rural/urban result as rural areas may have lesser administrative pressure • Cross-validate with National Health Information System (if available)
KBK is partly self report on the contact rate indicator. PHC report their service delivery through BPJS's information system	• Use KBK scoring minus the contact rate indicator • Cross validate the contact rate indicator data input through qualitative works on selected districts
Some BLUD Puskesmas may be BLUD on paper but still have financial interventions from the district.	• Test the early vs late adopter in the DiD analysis • Use district-level BLUD penetration rate as an instrument, rather just binary BLUD status • Mitigate using qualitative CFIR approach on selected districts

Synthesis & Integration

Blended payment is heavily influenced by PHC capacity to govern its own managerial and financial decision (through BLUD status). Therefore BLUD status plays important role in this analysis.

Mixed Method Synthesis would be done by:

- Quantitative DiD analysis would be used to inform the site selection for Qualitative using CFIR framework to assess the quality of KBK (P4P) implementation. District with dynamic performance metric between 2020-2024 would be chosen as qualitative site selection.
- The integration between qualitative and quantitative would follow the **Explanatory Sequential** approach**,** where qualitative using CFIR framework would be used to assess how how BLUD functions as the operational enabler of the KBK payment system, examining whether observed performance improvements are driven by the financing autonomy BLUD confers, or by the broader governance and management changes that accompany it

Next Steps & Discussion

Data Completion

- Finalizing the BLUD adoption rollout date, in communication with the Primary Health Care Directorate of MoH. Completing the SPM data report from Distritct Health Office.

Site Selection for Qualitative Work

- Using preliminary DiD results to construct the district typology (high/low capitation × high/low independent performance).

Qualitative Instrument Refinement

- We are on the process of piloting the qualitative instrument in Sleman District, Central Java. Next step would be analyzing preliminary qualitative findings and refine the instrument further.

Integrating the Quantitative and Qualitative Result

- Preliminary mixed method analysis as proof of concept

Study Adjustment & Challenge

Early Results of Quantitative & Qualitative

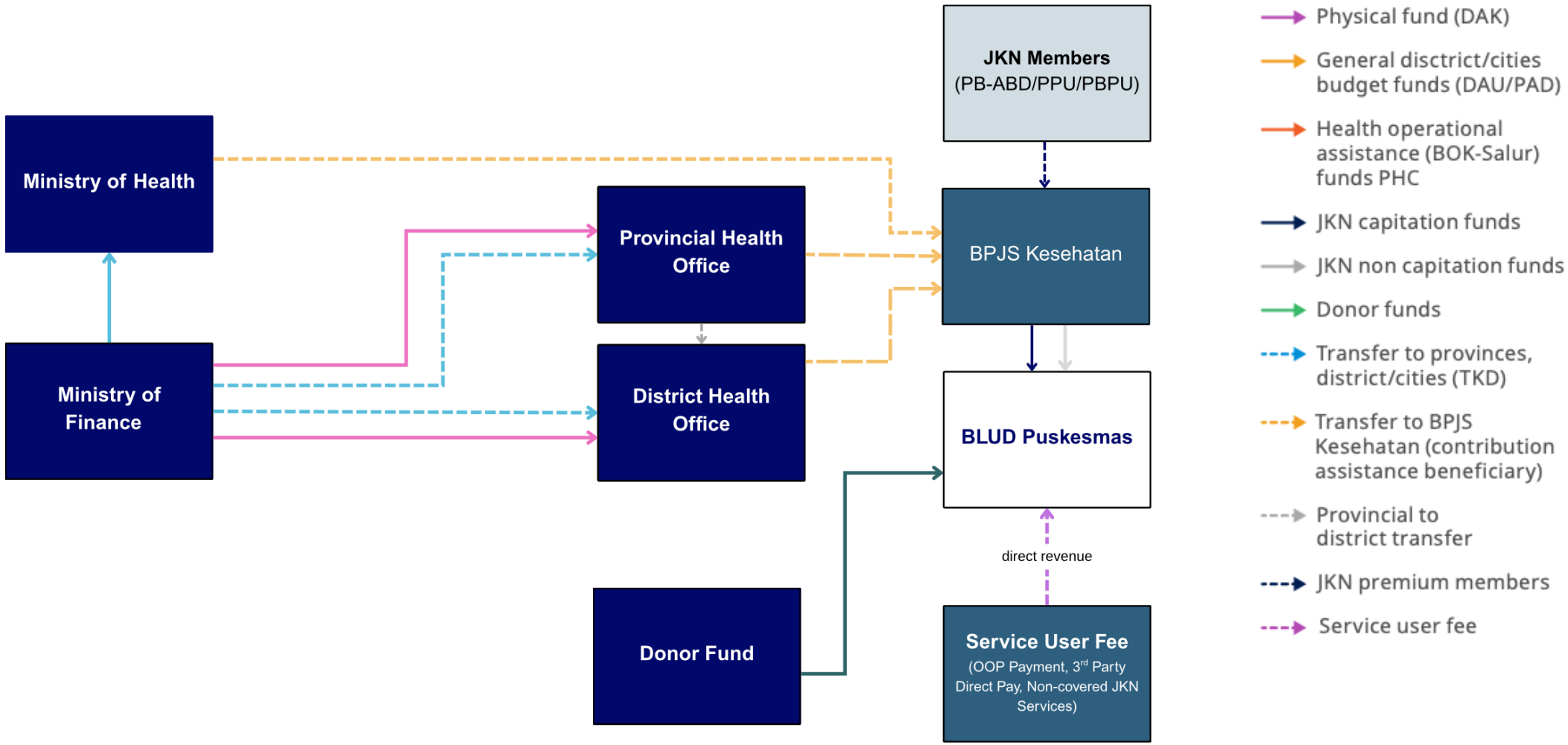
Tuesday, 6th November 2025

APPENDIX

Early Results of Quantitative & Qualitative

Friday, 20th February 2026

Mapping of Funding Flow for BLUD Puskesmas
Adapted from WHO, 2026



Mapping of Funding Flow for Non-BLUD Puskesmas
Adapted from WHO, 2026