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Performance Incentives and Managerial Practices: Experimental Evidence from Local Governments in Peru

Sarita Oré-Quispe¹

¹Teachers College, Columbia University.
spo2111@tc.columbia.edu

This paper examines how public organizations respond to institutional incentive design by comparing an input-based contract with a mixed input- and outcome-based contract. Using a clustered randomized controlled trial across 539 rural municipalities in Peru, I study how these contracts shape managerial practices in the implementation of a national Home Visit Program. While the mixed incentive did not alter home-visit coverage, it produced clear shifts in managerial behavior: municipalities expanded their supervisory staff, rewarded Community Health Workers more frequently, and intensified monitoring of the anemia indicator tied to the contract. They also adopted more targeted innovations for children at risk of anemia, although broader processes—such as training and supervision intensity—remained largely unchanged.

KEYWORDS

Performance-Based Incentives, Public Service Delivery, Health, anemia

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Incentivos al desempeño y prácticas de gestión: Evidencia experimental de gobiernos locales en Perú

Sarita Oré-Quispe¹

¹Teachers College, Columbia
University.
spo2111@tc.columbia.edu

Este artículo examina cómo las organizaciones públicas responden al diseño de incentivos institucionales comparando un contrato basado en insumos con un contrato mixto basado en insumos y resultados. Utilizando un ensayo controlado aleatorizado en 539 municipalidades rurales del Perú, analizo cómo estos contratos moldean las prácticas de gestión en la implementación de un programa nacional de visitas domiciliarias. Si bien el incentivo mixto no alteró la cobertura de visitas domiciliarias, este produjo cambios en el comportamiento gerencial: las municipalidades ampliaron su equipo de supervisores, recompensaron con mayor frecuencia a los Agentes Comunitarios de Salud y reforzaron el monitoreo del indicador de anemia vinculado al contrato. También adoptaron innovaciones más específicas para niños en riesgo de anemia, aunque los procesos más amplios —como la capacitación de los agentes y la intensidad de la supervisión— se mantuvieron en gran medida sin cambios.

KEYWORDS

Incentivos basados en el desempeño, provisión de servicios públicos, salud, anemia

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1 | INTRODUCTION

Governments play a central role as service providers and in facilitating economic development (Finan et al., 2017). What can be done to motivate public providers¹ to deliver quality services? A growing body of research focuses on the importance of Pay-for-Performance (P4P) monetary incentives for inducing agents' effort (Hasnain et al., 2014; Finan et al., 2017). When it comes to incentive design, the decision of whether to contract based on inputs or outcomes is not trivial (Mohanani et al., 2021). For instance, if the primary objective of a program is to achieve a specific outcome—such as improving health—it may seem logical for performance incentives to reward those outcomes rather than service utilization or other inputs (e.g., home visits). However, there is a trade-off between innovation and risk. While contracting on outcomes can provide strong incentives for agents to put forth effort and develop efficient, context-appropriate strategies to maximize desired results, this may be ineffective if agents lack control or doubt their ability to influence the outcome (Miller and Babiartz, 2014; Abraham and Cooper, 2019). In such cases, where the contract may be perceived as risky, it might be more effective to focus on contracting inputs instead, as these are generally more responsive to agents' effort.

In this paper, I examine the effects of input-based incentives compared to a middle-ground approach that combines both input- and outcome-based incentives, which I denominate as *Mixed incentive*. In particular, I compare the effects of both incentive schemes on public service delivery and managerial practices in the implementation of the home visits. To this end, in partnership with the Peruvian Ministry of Economy and the Ministry of Health, we designed and implemented both incentive schemes targeting the rural municipalities. The input-based incentive scheme considers two input indicators: i) the percentage of children under 12 months old who receive home visits, and ii) the percentage of pregnant women who receive home visits. The Mixed incentive extends the input-based contract by incorporating an additional outcome indicator: the percentage of children who are not anemic or have improved their hemoglobin levels at six and/or twelve months of age.

I evaluate the effects of the mixed incentive with a clustered-randomized controlled trial involving 539 municipalities (85% of the national group of rural municipalities). From these, 270 municipalities were randomly assigned to input-based contracts—i.e., continued under the *status quo* contract existing since 2019—while 269 received the mixed incentive contract. There is no pure control group without any type of incentive scheme. These incentive schemes were applied to the municipalities during the period of August to December 2024. Baseline data collecting information on managerial practices was implemented in March–April 2024, approximately three months before the incentive intervention was introduced. Endline was collected during June–September 2025. To shed light on whether there is a differential effect between the input-based and mixed incentive contracts on service delivery, I use administrative data from the Home Visit Program.

Municipalities demonstrated a strong understanding of the incentive schemes to which they were assigned. By October 2024, 98.2% of municipalities correctly identified whether

¹The public sector organizations differ from the private sector in multiple aspects. Unlike the private sector, public sector objectives are often more long-term, complex and diffuse, making performance difficult to measure (Xu et al., 2024). In addition, employees in the public sector are often driven by intrinsic motivations, making financial incentives less effective (i.e., motivational crowding out). Public agencies also face multiple principal-agent problems (Dixit, 2002; Pepinsky et al., 2017) due to complex hierarchies, and are often subject to political and institutional constraints that do not apply to private sector companies.

they were operating under an input-based incentive or a mixed incentive. The introduction of a mixed input-and-outcome incentive contract generated clear shifts in managerial behavior, even though frontline service delivery remained unchanged. Municipalities assigned to the mixed incentive expanded their supervisory teams by 61% and narrowed supervisors' scope of responsibilities, indicating greater specialization in oversight functions. Managers also became substantially more likely to reward Community Health Workers—an increase of 17 percentage points (p.p.). Managers were also more likely to monitor the anemia indicator tied to the contract, a 45% increase relative to the input-based group. Beyond these internal management adjustments, municipalities under the mixed incentive selectively adopted innovations targeted at children at risk of anemia, while broader processes such as CHW training, supervision intensity, and general monitoring systems remained largely unaffected.

This study makes several contributions to the literature. To the best of my knowledge, this study will be the first to compare input-only incentives to a scheme combining input incentives with output incentives in the context of institutional incentives, contributing to a better understanding of service delivery in the developing world (Pepinsky et al., 2017). It will also contribute to the literature on the personnel economics of the state and bureaucracies and on how to increase civil servant performance (Celhay et al., 2019; Huillery and Seban, 2021; Luo et al., 2019; Miller and Babiarz, 2014; Mohanan et al., 2021; Olken et al., 2014). Finally, it will contribute to the literature on home visits and volunteer health workers (Lehmann and Sanders, 2007; Caria et al., 2024; Fracchia, wp; Fracchia et al., 2023).

The rest of the document proceeds as follows: in Section 2 and 3 I describe the setting and the home visit program. In Section 4 I describe the experimental design. Section 5 and 6 present the data and main results. Finally, Section 7 concludes.

2 | BACKGROUND

This section provides essential context for understanding the intervention analyzed in this study. It begins by outlining the country's administrative structure and the role of municipalities in public service delivery, with a focus on the Municipal Incentive Program—a national performance-based scheme that allocates additional budget to municipalities. It then describes the prevalence and consequences of childhood anemia in Peru.

2.1 | Administrative organization and municipal incentives

Peru is an upper-middle-income country with a per capita income of 8,452 USD in 2024.² Administratively, the country is divided into 25 regions, which are further subdivided into 196 provinces and 1,891 districts. Regional governments oversee the regions, while local governments—known as municipalities—are responsible for district-level administration. In practice, municipalities primarily manage basic local services such as water and sanitation, waste collection, maintenance of public spaces, local infrastructure, business licensing and local tax collection. The decentralization of the health sector, however, remains limited. The primary responsibility for both primary healthcare and hospital services in Peru lies at the regional level, with little participation from local governments (Alves et al., 2025).

In 2009, the Ministry of Economy and Finance launched the Municipal Incentive Pro-

²World Bank (November 29th, 2024). Peru Overview. <https://data.worldbank.org>.

gram³ to improve the quality of local service delivery. The incentive program operates as an institutional performance-based financing scheme, allowing municipalities to access additional budget conditional on achieving specific service delivery targets. Performance-based transfers of this kind have become increasingly common across Latin America and the Caribbean (Alves et al., 2025).⁴ On top of that, governments often favor institutional over individual performance incentives, as they limit discretion, enhance transparency, and reduce corruption risks.⁵

Participation in the Municipal Incentive Program is formally voluntary; however, in practice, all municipalities participate, as the potential additional transfers represent. On average, municipalities can obtain resources equivalent to 3.4 times their expected annual tax revenue (Figure A.2), with a median ratio of 15.7. The incentive payments are disbursed after performance verification, typically during the following fiscal year, and can be used freely to finance the provision of public services.

2.2 | Children's anemia in Peru

Anemia is a condition in which the number of red blood cells or the hemoglobin concentration is lower than normal. Anemia during early childhood is broadly associated with growth retardation, reduced resistance to infections, delayed psychomotor development, lower language acquisition, and impaired cognitive and socioemotional development (INS, 2024). These developmental deficits can become a significant deterrent to human capital accumulation in developing countries, and hence a potentially important barrier to economic development (Chong et al., 2016).

Yet anemia continues to be a pressing global concern. Nearly half of all children under five worldwide are affected (42.8%), and the burden is even more severe in low- and middle-income countries, where prevalence reaches 56.5% (WHO, 2025; Sun et al., 2021). In Peru, the prevalence of anemia among children under five years of age is 33.4%, and 43.1% among those aged 6 to 35 months (INEI, 2023). This prevalence is consistently higher in rural areas.⁶

Anemia is primarily caused by iron deficiency (WHO, 2023) and it is the most prevalent micronutrient deficiency in the world (Chong et al., 2016). For children under one year of age, the most appropriate interventions are iron supplementation and caregiver's nutritional education, given their age-specific nutritional needs and feeding practices.⁷ For infants under one year of age, daily iron supplementation is administered in drops or syrup form

³In Spanish, *Programa de Incentivos a la Mejora de la Gestión Municipal*. Before 2016, it was known as *Plan de Incentivos a la Mejora de la Gestión Municipal*. For more information, see www.mef.gob.pe.

⁴A regional survey covering 24 countries found that 14 of 17 respondents use some form of performance-based financing (Pimenta et al., 2023).

⁵However, pooling incentives at the organizational level can also generate free-riding and weak internal accountability, since the rewards may not translate into direct benefits for the frontline workers (Miller and Babiarz, 2014).

⁶Between 2009 and 2023, the prevalence of anemia in rural areas has been approximately 10 p.p. higher than in urban areas. For instance, in 2023, anemia among children aged 6 to 35 months was 50.3% in rural areas, compared to 40.2% in urban areas (INEI, 2023).

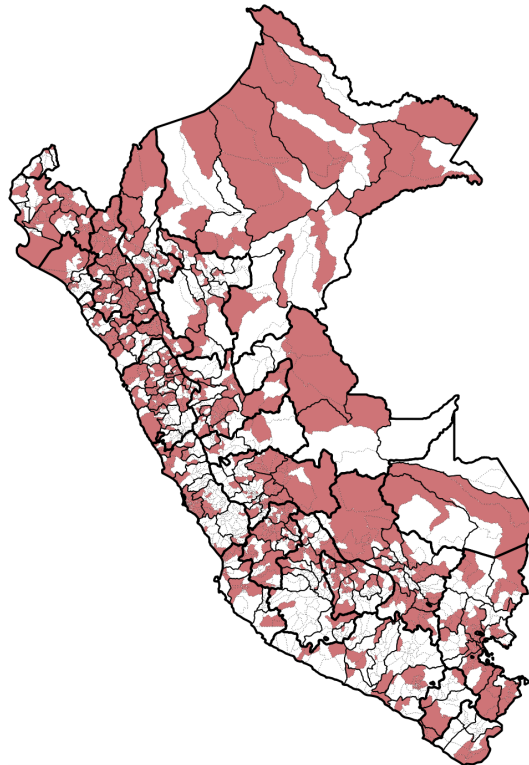
⁷The World Health Organization recommends four strategies to combat anemia: iron supplementation, food fortification, nutrition education, and dietary diversity (WHO, 2006). Although food fortification is generally considered the most effective and cost-efficient strategy (Mithra et al., 2020), it is not ideal for infants under one year. Children under six months are typically exclusively breastfed, and even after the introduction of complementary feeding at six months, the small portion sizes limit the intake of fortified and diverse foods.

for at least three consecutive months, with consistent adherence being crucial to ensure its effectiveness (WHO, 2016).

3 | THE HOME VISIT PROGRAM

In 2019, the Municipal Incentive Program began incentivizing the implementation of a Home Visit Program "Commitment 1" aimed at increasing adherence to iron supplementation among children under one year of age. It constituted a first step toward the decentralization of public health functions, engaging local governments in the delivery of preventive and community-based health interventions.⁸ The program targets 879 municipalities, including all 245 urban municipalities located in main cities and 637 of the most rural municipalities (Figure 1).⁹

FIGURE 1 Geographic Distribution of the 879 Municipalities Participating in the Home Visit Program



Notes: The figure shows the districts included in the implementation of the Home Visit Program, according to Supreme Decree No. 072-2019-EF.

The Home Visit Program is a community education initiative that delivers information

⁸This program was designed by the Ministry of Health. The full name of the program in Spanish is *Compromiso 1: Mejora del estado nutricional y de salud de los niños*. Before 2023, it was called *Meta 4: Acciones de los municipios para promover la adecuada alimentación, la prevención y la reducción de la anemia*.

⁹Municipalities are classified into seven types (A to G) based on their urban status, whether they are the main district of a province, and their share of urban population (Table A.1). According to this classification, the Home Visit Program targets the urban municipalities from main cities (types A, C, and D) and the group of the most rural municipalities (type G), with less than 35% of urban population.

to caregivers mainly on how to reduce anemia in their children. As part of this initiative, municipalities, in collaboration with healthcare staff, conduct home visits to low-income¹⁰ households with children aged 12 months or less. Months 4 and 5 mark a critical developmental window since neurological development accelerates and iron needs rise sharply with it (MIDIS, 2018). Accordingly, home visits for children aged 4–5 months are preventive and aim to reduce the likelihood of anemia by six months. For children aged 6–12 months, visits may be preventive or recuperative, depending on whether the child has already been diagnosed with anemia.¹¹

Home visits are performed three times a month, each with an average duration of 20 minutes. In 2024, during these home visits, standardized messages promoting essential health practices for maternal and child well-being were delivered, focusing on nutrition, hygiene, preventive care, and early childhood development.

Home visit organization: Municipalities are vertical organizations with three layers of hierarchy (see Figure 2). Each municipality appoints a Manager (top layer) who oversees the implementation of the Home Visit Program and acts as the principal to a team of supervisors. Just over half of managers (55%) report being motivated by the program’s contribution to population wellbeing, while the remainder are primarily motivated by meeting performance targets to secure the incentive payment. A large majority (87%) believe that the program’s success depends on the effort they exert.

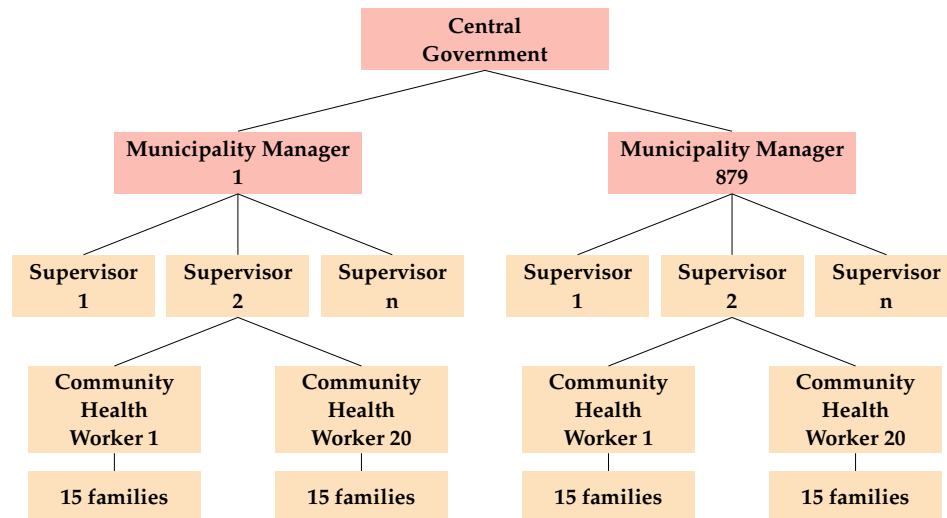
Each supervisor (intermediate layer) has a group of 20 service delivery agents¹² or Community Health Workers - CHW (bottom layer) as his own lower-tier agents. Each CHW works with 15 families. The personnel size depends on the size of the target population in their jurisdiction.

¹⁰The Program targets low-income families identified by their type of health insurance. The children targeted are those who do not have any health insurance or have government-sponsored health insurance for low-income populations called *Seguro Integral de Salud (SIS)*. SIS is equivalent to Medicaid in the United States context.

¹¹From 2019 to 2022, home visits targeted households with children aged 4 to 11 months. Until 2022, children 4-5 months would receive home visits regardless of their nutritional status; while children 6-11 would receive them only if they had been diagnosed with anemia at least once. In 2023, due to budget constraints, the focus shifted to households with children aged 3 to 5 months. In 2024, home visits were expanded to include households with children aged 1 to 12 months and pregnant women. Since 2023 home visits are performed regardless of the nutritional status of the child or the pregnant woman.

¹²The majority of service delivery agents (80%) are CHWs, so, for simplicity, I use the terms *service delivery agents* and *CHW* interchangeably.

FIGURE 2 Hierarchy Illustration for Municipality 1 and 879



Notes: Municipalities have a vertical organization in developing the Home Visit Program. Municipalities designate one manager to oversee the whole Program. The manager is the principal with the team of supervisors as his agents. At the same time, these supervisors are in charge of the service delivery agents. Mostly, the service delivery agents are Community Health Workers. The personnel size ultimately depends on the size of the target population in their jurisdiction. Each service delivery agent works with 15 families, and there is a supervisor for every 20 service delivery agents. Personnel from the health facilities train the service delivery agents.

Role of the managers: The municipal manager oversees all health and social programs within the municipality, including the implementation of the Home Visit Program. As part of this role, the manager plans and assigns tasks to supervisors and makes key personnel decisions such as hiring, dismissals, promotions, and setting incentives or compensation for supervisors. In coordination with health facility staff, the manager may also participate in similar personnel decisions concerning CHWs.

Overall, autonomy in these areas is high: 46% of managers report a high level of autonomy, 41% a medium level, and only 11% a low level, indicating that most managers exercise substantial discretion over the program implementation. Autonomy, however, varies across specific tasks. Managers report particularly high autonomy in assigning tasks to supervisors (55%), hiring CHWs (52%), and managing personnel payments (47%). Similarly, 44% report high autonomy in planning activities, while 42% report high autonomy in incentivizing CHWs and 42% in hiring supervisors. Taken together, these patterns suggest that managers hold significant decision-making authority across multiple dimensions of the program management (Figure A.3).

Role of the supervisors: Supervisors play a central role in supporting CHWs by coordinating with health facilities to ensure that staff provide regular training sessions and that referred children receive appropriate care. They also monitor CHWs' productivity and the quality of their home visits. To maintain high standards of service delivery, supervisors accompany CHWs on home visits and use a checklist to assess performance. This allows them to provide constructive feedback and guide health workers on areas for improvement. Additionally, supervisors offer ongoing, on-site training to further develop CHW's skills and to enhance their performance. Supervisors exhibit a high degree of autonomy in these

activities: 71% report high autonomy in coordinating with health facilities and 59% in training CHWs. These patterns underscore supervisors' pivotal role in maintaining service quality and supporting CHW performance (Figure A.3).

Role of the CHWs: CHWs are responsible for scheduling and conducting the home visits, during which they provide health education to families using standardized messages. For doing so, they receive 2-days in-person training from the Health Facility staff on essential topics such as iron supplementation, exclusive breastfeeding, iron-rich complementary feeding, vaccinations, the importance of attending health center growth and development check-ups, handwashing, safe water consumption, and early bonding. They are also trained to recognize children's danger signs for referral to health facilities. In addition, CHWs receive discretionary "on-the-field" training from supervisors.

To ensure high-quality visits, CHWs follow a printed checklist format, and use a flipchart that provides a structured guide on how to effectively deliver each topic to families.¹³ The municipality's performance ultimately depends on the CHW's effort since they have the most direct contact with the target population of the Home Visit Program.

Performance verification and bonus payment: The Ministry of Health verifies municipal performance using administrative data (details in Section 5.1). Each municipality d participates in the incentive program and is eligible for a total potential bonus B_d , distributed equally across K performance indicators. Hence, each indicator k carries a potential bonus of $B_{dk} = B_d/K$. Municipality's payment for indicator k , denoted P_{dk} , depends on the municipality's performance x_{dk} relative to the pre-defined performance floor (\underline{x}_{dk}) and performance ceiling (\bar{x}_{dk}):

$$P_{dk} = \begin{cases} 0, & \text{for } x_{dk} < \underline{x}_{dk} \\ 0.75 * B_{dk}, & \text{for } \underline{x}_{dk} \leq x_{dk} < \bar{x}_{dk} \\ B_{dk}, & \text{for } x_{dk} \geq \bar{x}_{dk} \end{cases} \quad (1)$$

The municipal incentive payment $P_m = \sum_{k=1}^K P_{dk}$ is disbursed after performance verification and at the beginning of the following fiscal year, without affecting the ongoing implementation. Before the trial began, from January to July 2024, municipalities were evaluated solely on whether they met the predetermined target for the indicator measuring the share of children under 12 months who received a home visit. Consequently, the total bonus that municipalities could obtain depended entirely on their performance in that single indicator.

Meeting the performance targets in the incentive scheme is highly salient for managers. They are generally optimistic about their ability to do so, they estimate that the probability of meeting the performance targets is 82.6% (Table 1). At the same time, managers anticipate meaningful accountability consequences if the target is not met. Among rural managers, the perceived probability of being dismissed is 56%, and the perceived probability of being reassigned to another municipal department is 31%. Managers also expect consequences for their subordinates, though of lower magnitude. If the targets are not achieved, they assign a 50% probability that supervisors would be dismissed and a 36% probability that CHWs would face dismissal.

¹³More details on the materials used by the CHWs and supervisors during the home visits can be found in Appendix C.

TABLE 1 Managers' Expectations and Perceived Consequences Related to the Incentive Scheme

	Total (%)	Urban Municipality (%)	Rural Municipality (%)
Expected probability of meeting the target	81.19	77.62	82.58
<i>Expected probability of consequences if failing the target</i>			
Manager dismissed	59.11	66.26	56.32
Manager reassigned to another department	30.06	26.85	31.31
Supervisors dismissed	54.25	65.70	49.79
CHWs dismissed	37.48	41.49	35.92

Notes: *Expected probability of meeting the target* is the supervisor's subjective probability that the municipality will meet the performance thresholds. *Manager dismissed*, *Manager reassigned*, *Supervisors dismissed*, and *CHWs dismissed* are dummies equal to 1 if the supervisor reports that each respective position would face that consequence should the municipality fail to meet all indicators. Data come from the baseline survey to managers.

4 | EXPERIMENTAL DESIGN

The incentive scheme for August – December 2024 was developed in joint collaboration with the Ministry of Economy and the Ministry of Health. It was formalized through a series of legal resolutions.¹⁴ The incentive scheme considers up to three indicators:

- (i) The percentage of children under 12 months old who receive home visit
- (ii) The percentage of pregnant women who receive home visits
- (iii) The percentage of children who are not anemic or have increased their hemoglobin levels at six and/or twelve months old

Based on these indicators, municipalities were offered one of two alternative incentive contracts:

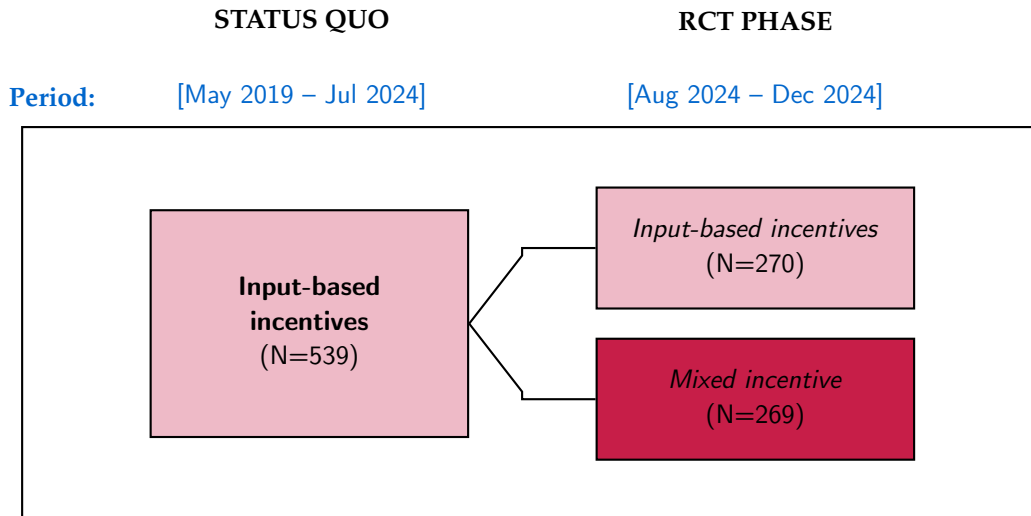
- Under the *input-based incentive contract*, municipal performance is evaluated exclusively on the two input indicators (i and ii). Municipalities are eligible for a total potential bonus of B_m , which is divided equally across the two indicators, so that each indicator carries a maximum payment of $B_{mk} = B_m/2$.
- Under the *mixed incentive contract*, municipal performance is evaluated on the same two input indicators (i and ii) as well as the outcome indicator (iii). The total potential bonus B_m is held constant across contracts but is divided equally across the three indicators, such that each indicator carries a maximum payment of $B_{mk} = B_m/3$.

I use a clustered randomized controlled trial to evaluate the impacts of the mixed incentive on municipality's service delivery and managerial practices. Randomization was

¹⁴See, among others: [Law 31953](#), [DS 318-2023-EF](#), [RD 0006-2024-EF/50.01](#), [DS 132-2024-EF](#), and [RD 0027-2024-EF/50.01](#).

done on the group of rural municipalities at the district level.¹⁵ For evaluation purposes, I restrict the sample to rural municipalities with at least 15 children, resulting in a final group of 539 municipalities. Using a random number generator in STATA, 270 were randomly assigned to input-based contracts, while 269 received an input- and outcome-based incentive contract or “*Mixed incentive*” (See Figure 3).¹⁶

FIGURE 3 Experimental Design



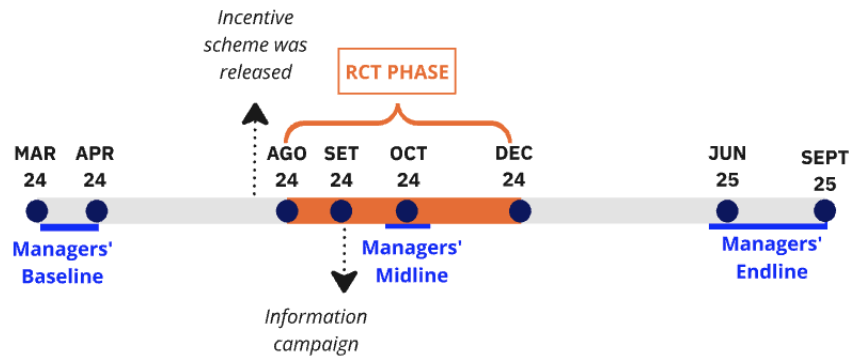
Notes: The figure summarizes the experimental design. Municipalities receiving input-based incentives from May 2019 to July 2024 were randomly assigned to either continue with the same scheme (N=270) or to switch to a mixed incentive during the RCT phase (N=269).

The treatment assignment was disseminated through multiple institutional channels to ensure transparency and municipal awareness. In late July 2024, the Ministry of Economy and Finance published the legal resolutions in the national newspaper and on its website. These resolutions included an extensive table listing all participating municipalities along with the indicators and performance thresholds assigned to each—information. The Ministry of Health complemented this announcement with in-person and virtual workshops for municipal authorities. To facilitate clearer communication, and in close coordination with the Ministry of Health, I implemented a nationwide online information campaign during September 2024. Unlike the consolidated official list, this campaign delivered municipality-specific information, providing each municipality only with the indicators and thresholds relevant to its own performance evaluation. A timeline of these dissemination activities is presented in Figure 4, and additional details on the information campaign are provided in Appendix B.

¹⁵All the 245 urban municipalities were assigned to the mixed contract by government’s decision.

¹⁶Figure A.1 shows the geographical distribution of the 539 municipalities participating in the experiment, by treatment arm.

FIGURE 4 Research Timeline.



Notes: The figure summarizes the research timeline, including the three rounds of surveys to managers, the release of the incentive scheme in August 2024, the information campaign, and the randomized controlled trial (RCT) implementation period from August to December 2024.

5 | DATA

5.1 | Administrative data

5.1.1 | Home Visit Program

I have access to the Home Visit Program database, which contains detailed information on CHW characteristics, payroll, the timing and duration of all completed home visits, and the block where households are located. This database enables the identification of the CHW assigned to each family and allows me to assess CHW retention and turnover. Additionally, I will have access to validation and supervision results from health facility staff, who evaluate the veracity of the home visits for a random 10% sample of home visits.

5.1.2 | Public Budget Information System – SIAF

I use data from the *Sistema Integrado de Administración Financiera (SIAF)*, Peru's Integrated Financial Management System administered by the Ministry of Economy. This administrative database records all public expenditures and transfers executed by national, regional, and local governments. SIAF provides detailed information on the timing, amount, and budget classification of municipal expenditures, income sources and transfers received, including the resources received through the municipal incentive program. The dataset is available at a monthly transaction level and will allow me to track municipal spending patterns across functional categories, and assess the extent to which municipalities allocate additional resources to activities related to the Home Visit Program.

5.2 | Survey to Managers

All 539 municipality managers were surveyed at baseline in March–April 2024, three months before the intervention was introduced. The one-hour online survey collected data on managers' demographic backgrounds and Home Visit Program staff characteristics. It also elicited beliefs and expectations about the incentive scheme for the August–December 2024 period, when the RCT would take place. In addition, the survey gathered detailed data on CHW training (e.g., number of sessions and trainers), implemented monitoring practices, incentives to personnel, complementary anemia-reduction strategies, and partnerships with

other institutions. Endline data collection occurred over four months beginning in June 2025, at least five months after the intervention concluded. I successfully tracked 448 managers (83%) who were able to answer questions related to the RCT period. Attrition rates were balanced across treatment and control groups (see Table A.3 and A.4).¹⁷

Table 2 presents the balance tests comparing districts assigned to the input-based incentive and those assigned to the mixed incentive at baseline. Panel A describes district-level socioeconomic conditions. On average, 20% of households are connected to a public water and sewage network, and 83% of the population is covered by government-sponsored health insurance. Population (25 or more years old) has approximately 7.2 years of education. Municipalities, on average, spend an average of USD 606.7 per capita on total expenditure, USD 16.2 per capita on health, and USD 6.1 per capita on nutrition.

Panel B summarizes key attributes of the Home Visit Program’s workforce. Managers are, on average, 33 years old, 44% are male, and 63% hold a university degree. They bring an average of 8.6 years of work experience, including about 1.9 years specifically in the Home Visit Program. Supervisors constitute a relatively small team, with an average of 0.6 supervisors per municipality, and 29% have a higher-education degree. Community Health Workers form the largest group, with an average of 11.6 CHWs per municipality; about 16% of them have completed higher education. Panel C describes baseline child health indicators. On average, children received 5.3 health facility check-ups and their caregivers collected iron supplements approximately 5.5 times. 12% percent of children were anemic at either 6 or 12 months of age.

Regarding balance across treatment arms, the only statistically significant difference arises in the gender composition of managers: mixed-incentive municipalities have a higher share of male managers ($p < 0.01$).¹⁸ No other managerial, supervisor, or CHW characteristics exhibit meaningful differences. Likewise, all district characteristics and child health or service-use indicators reported in Panels A and C are statistically indistinguishable across treatment groups at the 95% confidence level. Overall, fewer than 10% of the differences across all variables in the table are statistically significant, reinforcing that the random assignment generated well-balanced treatment arms at baseline.

¹⁷A potential concern is that the incentive scheme could differentially affect managerial turnover, creating selection into treatment implementation. If managers in treated municipalities exit or enter at higher rates, estimated treatment effects might partly capture changes in implementer composition rather than behavioral responses to the contract. However, Table A.5 shows that the probability a manager remained in the municipality throughout the RCT period is statistically indistinguishable across treatment arms, mitigating concerns about differential turnover.

¹⁸*A priori*, it is unclear whether—and in which direction—this difference could bias the estimates, as the relationship between manager gender and managerial practices is not well established. However, robustness checks that control for manager gender yield virtually identical results, indicating that this imbalance does not affect the findings.

TABLE 2 Balance at Baseline

	Input-based incentive mean	Mixed incentive mean	Diff (SE)	p-value of Diff
<i>Number of Districts</i>	270	269	-	-
<i>Panel A: District Characteristics</i>				
Population has government-sponsored health insurance	0.82	0.83	0.02 (0.01)	0.08*
Population's years of education	7.25	7.21	-0.04 (0.07)	0.56
Total expenditure (USD per capita)	556.05	657.61	101.56 (66.15)	0.13
Expenditure in health (USD per capita)	17.17	15.28	-1.90 (5.80)	0.74
<i>Panel B: Home Visit Program Characteristics</i>				
<i>Managers' Characteristics</i>				
Age	33.18	33.26	0.08 (0.70)	0.91
Dummy if male	0.38	0.50	0.12 (0.04)	0.01***
Has higher education	0.30	0.29	-0.01 (0.04)	0.87
Total years of experience	8.14	8.98	0.83 (0.79)	0.29
Years of experience in the HV Program	1.81	1.94	0.12 (0.15)	0.40
<i>Supervisors' Characteristics</i>				
Number of supervisors	0.65	0.57	-0.08 (0.14)	0.58
Has higher education	0.28	0.30	0.02 (0.04)	0.69
<i>Community Health Workers' Characteristics</i>				
Number of CHW	11.08	12.05	0.97 (1.13)	0.39
Has higher education	0.16	0.15	-0.01 (0.02)	0.79
<i>Panel C: Children characteristics</i>				
Total check-ups	5.25	5.26	0.01 (0.06)	0.90
Number of times family collects iron supplements	5.51	5.58	0.07 (0.13)	0.57
Anemic at 6 and/or 12 months	0.11	0.12	0.01 (0.01)	0.30

Notes: Panel A reports district-level socioeconomic characteristics. Panel B summarizes characteristics of managers, supervisors, and Community Health Workers involved in the Home Visit Program. Panel C presents baseline child health and service-use indicators.

Since the effectiveness of incentive contracts depends on municipalities fully understanding their terms, a short follow-up survey was conducted in October 2024—two months after the treatment launch. This follow-up assessed managers’ comprehension of the incentive scheme and their assigned treatment arm, along with a few questions on the implementation of the Home Visit Program. Figure 4 summarizes the project timeline.

6 | MAIN RESULTS

6.1 | Estimation

To assess the effects of the intervention, I estimate the following ANCOVA specification using ordinary least squares (OLS):

$$Y_d = \alpha + \beta \text{MixedIncentive}_d + \gamma Y_d^0 + \epsilon_d \quad (2)$$

where Y_d is the outcome of interest at endline for municipality d . MixedIncentive is an indicator equal to 1 if municipality d was assigned to the treatment group (i.e. mixed incentive contract) and 0 otherwise. The comparison group represents the *status quo* scenario with municipalities under the input-based incentive contract. Y_d^0 is the baseline level of the outcome variable and it is included when available. Under the identifying assumption that the comparison group forms a valid counterfactual for the treatment group, β provides the causal effect of the intervention. In particular, β provides the causal effect of having a mixed incentive contract. Since the randomization was conducted at the district level, I cluster the standard errors by district.

6.2 | Results

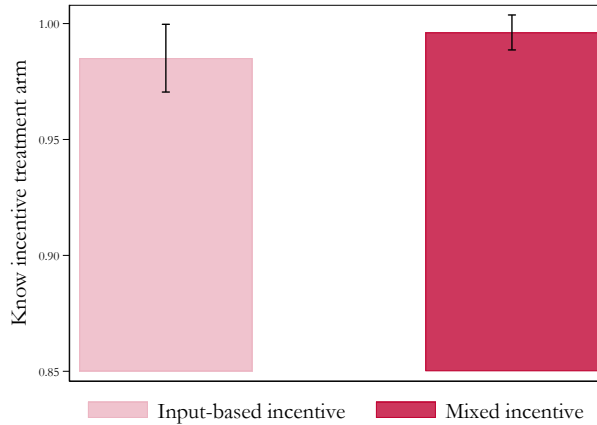
The results are organized around the main pathways through which incentive contracts may influence municipal behavior and the program performance. I begin by assessing municipalities’ understanding of the incentive scheme, a necessary condition for interpreting subsequent behavioral responses. I then examine the intervention’s effects on service delivery, focusing on home-visit coverage for children and pregnant women. The remaining subsections analyze changes in managerial practices, structured into four domains: (i) staffing and personnel management, (ii) supervision and monitoring systems, (iii) the use of managerial incentives and rewards, and (iv) the adoption of program-related innovations.

6.3 | Understanding of the Incentive Scheme

Before examining behavioral responses, it is essential to confirm that municipalities correctly understood the performance criteria associated with their assigned contracts. As of October 2024—approximately two months after the intervention began—municipalities exhibited a high degree of comprehension of the incentive scheme’s structure and their treatment assignment. As shown in Figure 5, municipalities understood the criteria by which their performance would be evaluated. As of October 2024, 98.2% of municipalities correctly identified whether they were under an input-based or a mixed incentive contract. This supports the internal validity of subsequent analyses of managerial and service-delivery

responses.¹⁹

FIGURE 5 Knowledge of Treatment Status



Notes: This graph shows the percentage of managers who know correctly identified the indicators on which their municipality would be evaluated under the incentive scheme. The information is based on the midline supervisor survey.

6.4 | Effects on Service delivery

Table 3 shows that the mixed-incentive contract did not affect home-visit coverage for either children or pregnant women. For children, the estimated effects on both overall coverage and the likelihood of achieving the coverage target are extremely small (0.5 and -0.4 p.p., respectively) and close to zero relative to the high control means of 88% coverage and 75% target achievement. The same pattern is observed for pregnant women: coverage remains extremely high in both treatment and control municipalities (around 94%), and the probability of meeting the target is similarly unaffected.

These results reflect the fact that baseline delivery rates were already very high, leaving little room for improvement. The mixed incentive therefore did not alter municipalities' capacity to deliver home visits, nor did it increase the likelihood that CHWs met program targets. Overall, home-visit coverage appears stable and unaffected by the incentive scheme.

¹⁹Municipal managers also demonstrated relatively strong comprehension of the definition and objective of the anemia indicator (Table A.2). Approximately 81% correctly recognized that the outcome indicator is a composite measure—namely, that performance improves when a child either remains non-anemic or exhibits an increase in hemoglobin levels between 6 and 12 months of age. In contrast, understanding of the more technical components of the indicator, such as the exact rules governing the numerator, denominator, and deductions—was substantially lower, indicating limited grasp of how performance would ultimately be evaluated.

TABLE 3 No effects on home-visit coverage

	Home visits to children		Home visits to pregnant women	
	Coverage (%) (1)	Achieved target (2)	Coverage (%) (3)	Achieved target (4)
Mixed incentive	0.005 (0.009)	-0.004 (0.021)	-0.008 (0.015)	-0.004 (0.028)
Control mean	0.880	0.748	0.941	0.878
Magnitude of the effect (%)	0.568	-0.535	-0.850	-0.456
Observations	539	539	539	539

Notes: Coverage reports the percentage of children or pregnant women who received the timely home visits. Achieved target indicates whether the municipality met the performance threshold for each indicator. Columns 1 and 2 report estimates from ANCOVA models at the district level, and columns 3 and 4 report estimates from ANOVA models. Controls are not included. Standard errors clustered at the district level are reported in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for p-values.

6.5 | Effects on Managerial Practices

6.5.1 | Staffing and Personnel Management

Table 4 summarizes the effects of the mixed-incentive contract on staffing structures and personnel characteristics within municipalities. For Community Health Workers (CHWs), the intervention does not lead to detectable changes in workforce size or educational composition (columns 1 and 2). Similarly, the mixed incentive does not affect municipalities' investments in CHW capacity building: the total number of training sessions provided during the intervention period is nearly unchanged (column 3).

In contrast, staffing adjustments emerge more clearly among supervisory personnel. Municipalities assigned to the mixed incentive employ, on average, an additional 0.39 supervisors—a sizable 61% increase relative to the control mean of 0.64 supervisors per municipality. This expansion of supervisory capacity is not accompanied by changes in supervisors' educational attainment, as the share with higher education remains stable. However, supervisors in treated districts perform fewer roles than their counterparts in control districts, with the number of roles decreasing by 0.26 (a 10% reduction relative to the control mean). This suggests a reallocation of supervisory responsibilities toward a more specialized division of labor, potentially enabling supervisors to focus more narrowly on core program functions.

TABLE 4 Effects on Staffing and Personnel Management

	Community Health Workers (CHW)			Supervisors		
	Total CHW (1)	Share with higher education (2)	Total training sessions (3)	Total supervisors (4)	Share with higher education (5)	Number of roles (6)
Mixed incentive	-0.321 (0.993)	0.018 (0.022)	0.111 (1.266)	0.392* (0.233)	0.046 (0.044)	-0.260* (0.151)
Control mean	11.652	0.168	10.731	0.643	0.285	2.592
Magnitude of the effect (%)	-2.755	10.714	1.034	60.964	16.140	-10.031
Observations	447	447	446	447	447	448

Notes: Columns 1–2 report effects on Community Health Workers (CHWs). *Total CHW* is the number of CHWs in the municipality. *Share with higher education* is the proportion of CHWs holding a higher-education degree. Column 3 reports the total number of training sessions provided to CHWs during the RCT period. Columns 4–6 report effects on supervisory staff. *Total supervisors* is the number of supervisors in the municipality; *Share with higher education* is the proportion of supervisors with a higher-education degree; *Number of roles* refers to the number of distinct responsibilities the supervisor performs. Regression coefficients are estimated using ANCOVA models at the district level. Standard errors clustered at the district level are reported in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for p-values. Controls are not included.

6.5.2 | Monitoring and Supervision

Monitoring practices constitute a central managerial channel through which incentive schemes may shape program implementation. Table 5 shows the effects of the mixed-incentive contract on the practices municipalities use to monitor children's cases and in the monitoring of key performance indicators. In the first two columns, the estimated effects on creating a monitoring system and on following up on children's health services are small and statistically insignificant. These results indicate that the mixed incentive did not lead municipalities to adopt new case-monitoring structures or to strengthen follow-up processes for children requiring health services.

In contrast, the mixed incentive produces a meaningful shift in the monitoring of performance indicators. Municipalities assigned to the mixed contract are 13.9 p.p. more likely to monitor the anemia indicator (column 3), an effect that is statistically significant and sizable relative to the control mean (a 19% increase). This suggests that the mixed incentive encouraged managers to track the main performance metric tied to the incentive scheme.

TABLE 5 Effects on Monitoring of Children's Health and Performance Indicators

	Practices to monitor children's cases		Monitoring of performance indicators		
	Created monitoring system (1)	Follow-up on children's health services (2)	Monitored anemia indicator (3)	Monitored home visits to pregnant women (4)	Monitored home visits to children (5)
Mixed incentive	0.013 (0.045)	0.066 (0.041)	0.139*** (0.037)	0.006 (0.026)	-0.003 (0.026)
Control mean	0.656	0.719	0.721	0.442	0.850
Magnitude of the effect (%)	1.982	9.179	19.279	1.357	-0.353
Observations	442	442	445	445	445

Notes: *Created monitoring system* indicates whether the municipality established a system to track children's cases after a CHW made a community referral. *Follow-up on children's health services* indicates whether the municipality ensures that children receive the required health services. *Monitored anemia indicator* measures whether the municipality monitors children's anemia status on a daily or biweekly basis. *Monitored home visits to pregnant women* and *Monitored home visits to children* indicate whether the municipality monitors coverage of CHWs' home visits to pregnant women and to children, respectively. Columns 1 and 2 report estimates from ANOVA models at the district level, and columns 3–5 report estimates from ANCOVA models. Controls are not included. Standard errors are clustered at the district level in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for p-values.

Table 6 examines whether the mixed-incentive contract changed the supervision methods that municipalities use to verify CHWs' home visits. Across all four methods—accompanying the CHW during the visit, calling households to verify the visit, conducting a re-visit, and using any other monitoring strategy—the estimated effects are small and statistically insignificant.

Municipalities assigned to the mixed incentive are not more likely to accompany CHWs while they conduct home visits (column 1), with an estimated effect of 0.012 relative to a control mean of 0.381. Similarly, the intervention does not lead to meaningful changes in

whether supervisors call households to confirm that CHWs conducted the visit (column 2) or whether they conduct a re-visit to the household to verify that the visit occurred (column 3). Although the magnitude of the effect for re-visits is relatively large in percentage terms (23%), the estimate remains imprecise. The mixed incentive also did not increase the likelihood of using other monitoring methods (column 4). Taken together, the results suggest that municipalities under the mixed incentive did not adopt more intensive or alternative supervision practices for verifying CHW fieldwork.

TABLE 6 Effects on the Use of Supervision Methods for Community Health Workers

	Accompanied the CHW during the visit (1)	Called households to verify the visit (2)	Conducted a re-visit to the household (3)	Used other monitoring method (4)
Mixed incentive	0.012 (0.046)	0.048 (0.045)	0.050 (0.046)	0.031 (0.043)
Control mean	0.381	0.451	0.217	0.133
Magnitude of the effect (%)	3.150	10.643	23.041	23.308
Observations	445	445	445	445

Notes: Each column reports the effect on one supervision method used by municipalities to verify CHWs' home visits on a biweekly or more frequent basis. *Accompanied the CHW during the visit* indicates whether the supervisor accompanied the CHW while conducting a home visit. *Called households to verify the visit* indicates whether the supervisor phoned households to confirm that the visit took place. *Conducted a re-visit to the household* indicates whether the supervisor visited the household again to verify that the CHW completed the visit. *Used other monitoring method* captures the use of any additional verification strategy. Regression coefficients are estimated using ANCOVA models at the district level. Standard errors are clustered at the district level in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for p-values. Controls are not included.

6.5.3 | Payments and Incentives

Table 7 reports the effects of the mixed-incentive contract on both wage payments and rewards for CHWs and supervisors. The results show no meaningful change in wages for either group, indicating that the mixed incentive did not operate through adjustments in formal pay structures. In contrast, the intervention affected the use of rewards for CHWs. Managers in mixed-incentive districts are 16.8 percentage points more likely to provide any type of reward—monetary or non-monetary—to CHWs during the RCT period, a large shift amounting to a 45 percent increase relative to the control mean. No analogous changes are observed for supervisors, whose probability of receiving a reward remains similar across treatment arms.

TABLE 7 Effects on Payments and Incentives for CHWs and Supervisors

	Community Health Workers		Supervisors	
	Per-visit payment (USD) (1)	Any reward given (2)	Monthly wage (USD) (3)	Any reward given (4)
Mixed incentive	-0.048 (0.086)	0.168*** (0.047)	-15.245 (26.435)	-0.007 (0.027)
Control mean	3.191	0.375	289.274	0.094
Magnitude of the effect (%)	-1.504	44.800	-5.270	-7.447
Observations	355	443	443	443

Notes: Columns 1–2 report effects on Community Health Workers (CHWs). *Per-visit payment* refers to the amount CHWs receive per completed home visit. *Any reward given* is a dummy equal to 1 if the manager provided any monetary or non-monetary reward to CHWs, including economic incentives, public recognition, training opportunities, career advancement opportunities, in-kind goods, or other forms of recognition. Columns 3–4 report effects on supervisory staff. *Monthly wage (USD)* refers to supervisors' monthly salary. *Any reward given* is a dummy equal to 1 if the supervisor received any monetary or non-monetary reward. Regression in columns 1 to 3 are estimated via ANCOVA models at the district level, while column 4 is estimated via ANOVA. Standard errors clustered at the district level are reported in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for p-values. Controls are not included.

6.5.4 | Innovations

Table 8 examines whether the mixed-incentive contract encouraged municipalities to adopt new managerial or community-based innovations aimed at improving child health and anemia prevention. Overall, the results indicate little change in the total number of innovations, but some evidence of shifts in specific types of actions.

The mixed incentive does not significantly affect the overall number of innovations implemented (column 1). However, managers in treated municipalities are 11.9 p.p. more likely to introduce care innovations for children at risk of anemia (column 2), an effect that is statistically significant and represents approximately 9% increase relative to the control mean. This suggests that municipalities may have selectively adopted innovations directly aligned with anemia risk management—the key performance dimension of the mixed-incentive scheme.

In contrast, the mixed incentive shows no detectable effects on other types of innovations. The likelihood of offering behavior-change incentives to families (column 3), conducting workshops or community-based sessions for mothers (column 4), or distributing nutritional supplements or food items (column 5) remains unchanged between treatment and control municipalities. Similarly, the intervention does not increase the communication campaigns (column 6) or biogardens for families (column 7), with estimated effects close to zero and statistically insignificant.

TABLE 8 Manager's Innovations

	Manager's innovations						
	Number of innovations (1)	Improved care for children at risk of anemia (2)	Incentives provided to mothers (3)	Provided iron rich foods to families (4)	Conducted workshops for mothers (5)	Conducted communication campaign (6)	Created biogardens for families (7)
Mixed incentive	-0.063 (0.101)	0.119** (0.047)	-0.012 (0.029)	-0.036 (0.047)	0.012 (0.045)	-0.019 (0.046)	0.067 (0.044)
Control mean	1.263	0.500	0.112	0.446	0.344	0.362	0.268
Magnitude of the effect (%)	-4.988	23.800	-10.714	-8.072	3.488	-5.249	25.000
Observations	442	442	442	442	442	442	442

Notes: *Number of innovations* reports the total count of innovations implemented in the district, including improved care for children at risk of anemia, incentives provided to mothers, provided iron rich foods to families, conducted workshops for mothers, conducted communication campaign, and created biogardens for families. *Improved care for children at risk of anemia* is a dummy equal to 1 if actions were taken to strengthen the management or delivery of health services for children identified as being at risk of anemia. *Incentives provided to mothers* is a dummy equal to 1 if gifts or other incentives were offered to mothers to encourage acceptance of home visits. *Provided iron-rich foods to families* is a dummy equal to 1 if iron-rich foods were distributed to families. *Conducted workshops for mothers* is a dummy equal to 1 if workshops or other community-based activities for mothers were carried out. *Conducted communication campaign* is a dummy equal to 1 if communication campaigns were implemented in the district. *Created biogardens for families* is a dummy equal to 1 if biogardens were created for households. Columns 2 and 7 report estimates from ANOVA models at the district level, and columns 1, 3, 4, 5 and 6 report estimates from ANCOVA models. Controls are not included. Standard errors are clustered at the district level in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ for p-values.

7 | CONCLUSION

This study compares two alternative incentive designs—an input-based contract and a mixed input- and outcome-based contract—in a context where all municipalities were already subject to performance incentives and where, by design, no pure control group was feasible. Because the experiment was embedded in a nationally implemented program and conducted with the universe of 539 rural municipalities in Peru, the results speak directly to how incentive design, rather than the introduction of incentives per se, reshapes managerial behavior under real-world administrative conditions. This large-scale setting also enhances the policy relevance of the findings, as they reflect organizational responses that arise within an existing system rather than within a small pilot environment.

The evidence shows that linking incentives to outcomes did not shift frontline service delivery in the short run. Municipalities assigned to the mixed contract did not increase home-visit coverage for children or pregnant women, outcomes that were already near universal at baseline (88% and 94%, respectively). With limited scope for further improvements in coverage, the mixed incentive did not translate into measurable changes in the quantity of services provided.

In contrast, the mixed incentive generated meaningful changes in several managerial dimensions. Municipalities expanded their supervisory teams by roughly 61 percent and reduced the number of roles supervisors performed, indicating both an increase in oversight capacity and a movement toward greater functional specialization. Managers in treated districts also became substantially more likely to reward CHWs—an increase of 17 percentage points relative to the comparison group—suggesting heightened use of motivational tools even in the absence of changes to wage structures.

The mixed incentive further strengthened internal performance management. Municipalities increased monitoring of the anemia indicator tied to the contract by 14 percentage points, revealing a sharper focus on the program's key performance metric. They also selectively adopted innovations targeted at children at risk of anemia, while broader practices such as CHW training and general supervision methods. This selective pattern is consistent with incentives concentrating managerial effort and problem-solving on the most salient performance dimension.

Overall, the results highlight that performance incentives may operate primarily by reshaping internal organizational management. Incentive design can meaningfully affect staffing structures, enhance specialized oversight, redirect managerial attention, and increase the use of rewards and targeted innovations, even in settings where frontline outputs are already near saturation.

Finally, the managerial changes documented here were observed during the RCT period, after which all municipalities unexpectedly reverted to an input-based contract. Whether these practices persist in the absence of the mixed incentive remains an open question. Future research should evaluate longer-term trajectories after the conclusion of the RCT to assess whether these organizational responses are sticky or whether they diminish once the incentive's salience fades. Further work should explore how such managerial adjustments shape longer-run program performance and child health outcomes.

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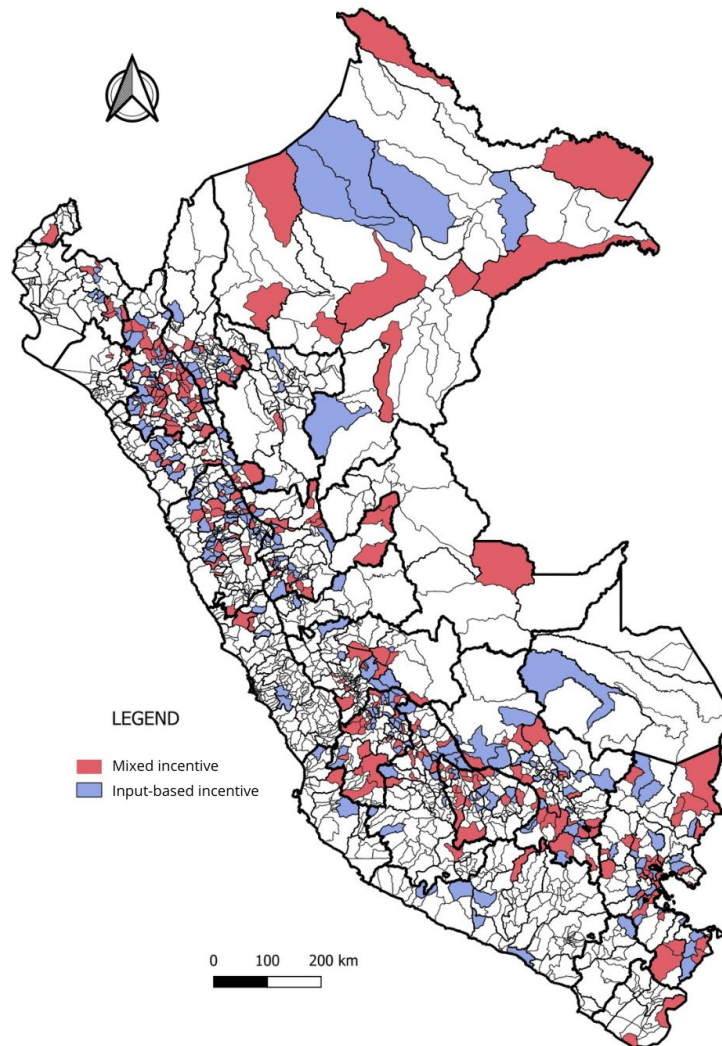
A | ADDITIONAL TABLES AND FIGURES

TABLE A.1 Municipality classification (2024)

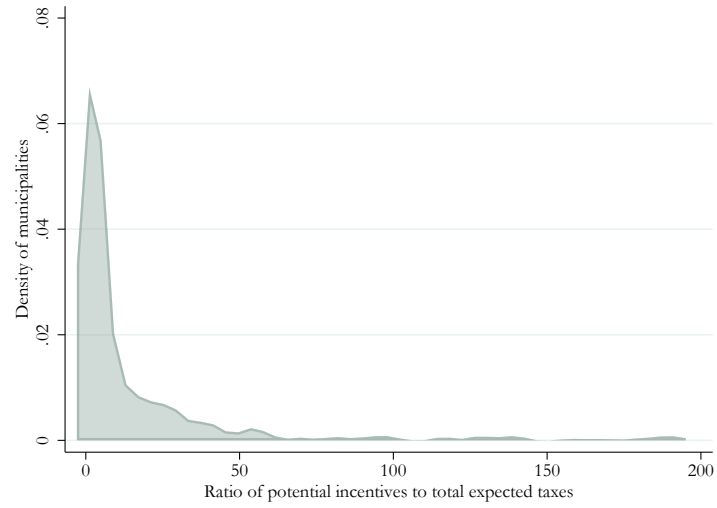
Municipality level	Type of Municipalities		Number of municipalities	HV Program	
Provincial	Belong to a main city	A	74	Yes	
	Does not belong to a main city	B	122		
District	Belong to Metropolitan Lima	C	42	Yes	
	Belong to other main cities	D	129	Yes	
	Does not belong to a main city	Urban population $\leq 70\%$	E	378	
		$35\% \leq$ Urban population $\leq 70\%$	F	509	
	Urban population $\leq 35\%$	G	637	Yes	
Total			1,891		

Notes: The classification of municipalities follows the categories established by the Municipal Incentive Program. This classification was formally approved under Supreme Decree No. 296-2018-EF, which defines municipality types (A to G) based on jurisdictional level (provincial or district), affiliation to major cities, and degree of urbanization. The Municipal Incentive Program itself is established under Law No. 29332 and its subsequent amendments. All municipalities in the country are assigned to one of these categories to determine their eligibility and corresponding incentive structure within the Program.

FIGURE A.1 Map of randomization

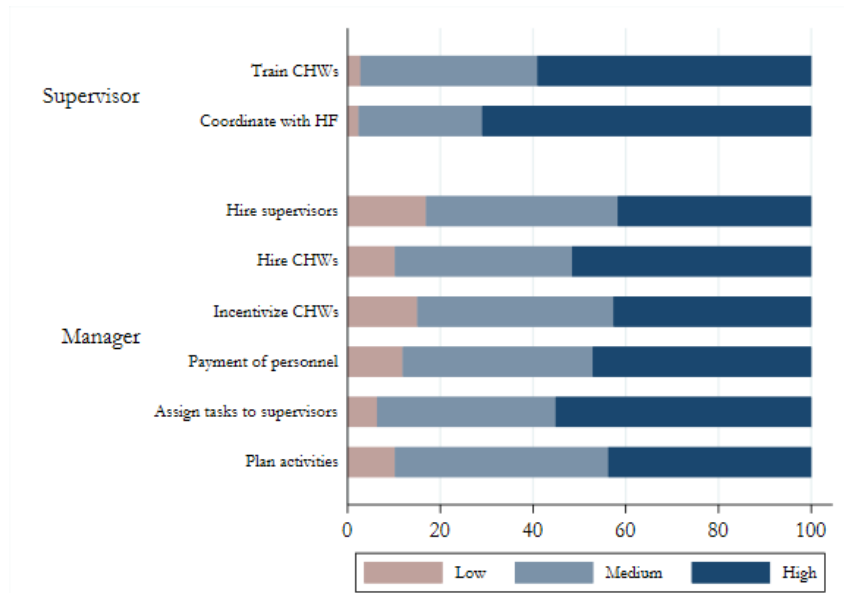


Notes: The figure shows the geographic distribution of the 539 rural municipalities included in the randomized controlled trial, by treatment arm. Municipalities assigned to the *input-based incentive* received a contract in which performance was evaluated solely on compliance with prescribed inputs, such as the number of home visits conducted. Municipalities assigned to the *mixed incentive* received a contract that combined input-based requirements with an outcome-based component tied to improvements in child anemia indicators.

FIGURE A.2 Ratio of potential incentives to local taxes

Notes: The ratio of potential incentives to total expected taxes is defined as the total amount a municipality could receive from the Municipal Incentive Program for perfect compliance in 2024 divided by the amount it expects to collect in local taxes in 2024. For visualization purposes, the figure excludes the upper 10% of the distribution; municipalities with ratios above 200 are therefore not shown.

FIGURE A.3 Level of Autonomy of Managers and Supervisors in Implementing the Program.



Notes: This figure shows self-reported levels of autonomy (low, medium, high) across key human-resource, planning, and coordination functions related to CHWs. For each function, managers were asked to indicate the degree of autonomy they and the supervisors exercise using three predefined categories: low, medium, or high autonomy. *Hire supervisors/CHWs* refers to authority to recruit and select staff. *Incentivize CHWs* captures autonomy to set incentive structures. *Payment of personnel* reflects control over payment modalities. *Assign tasks to supervisors* refers to allocating responsibilities within the supervisory team. *Plan activities* captures autonomy in defining activities and budgeting. *Train CHWs* indicates authority over training content. *Coordinate with HF* reflects decision-making autonomy in coordination with local health facilities.

TABLE A.2 Understanding of the outcome indicator

	Input-based incentive	Mixed incentive	Diff (1)-(2)
	Mean (SD)	Mean (SD)	
	(1)	(2)	
<i>It is a composite indicator</i>	0.810 (0.393)	0.814 (0.390)	0.913
<i>Objective</i>	0.656 (0.476)	0.686 (0.465)	0.468
<i>Deductions to denominator</i>	0.306 (0.462)	0.341 (0.475)	0.390
<i>Deductions to numerator</i>	0.164 (0.371)	0.257 (0.438)	0.009

Notes: *Composite indicator* is a dummy variable equal to 1 if the supervisor understands that the outcome indicator is a composite measure. *Objective* is a dummy variable equal to 1 if the supervisor knows the performance objective for the anemia indicator. *Deductions to denominator* is a dummy variable equal to 1 if the supervisor knows the rules governing the denominator of the Child Home Visit Indicator. *Deductions to numerator* is a dummy variable equal to 1 if the supervisor validates cases where a child in the denominator does not contribute to the numerator for the Child Home Visit Indicator. These statistics only consider rural municipalities. The information is drawn from the midline supervisor survey.

TABLE A.3 Baseline Balance for the 448 Districts Re-Surveyed at Endline

	Input-based incentive mean	Mixed incentive mean	Diff (SE)	p-value of Diff
<i>Number of Districts</i>	226	222	-	-
<i>Panel A: District Characteristics</i>				
Population has government-sponsored health insurance	0.82	0.83	0.01 (0.01)	0.40
Population's years of education	7.24	7.20	-0.04 (0.08)	0.63
Total expenditure (USD per capita)	576.06	652.04	75.98 (77.78)	0.33
Expenditure in health (USD per capita)	17.13	16.73	-0.40 (6.60)	0.95
<i>Panel B: Home Visit Program Characteristics</i>				
<i>Managers' Characteristics</i>				
Age	33.50	33.32	-0.18 (0.79)	0.82
Dummy if male	0.39	0.49	0.09 (0.05)	0.05**
Has higher education	0.31	0.28	-0.03 (0.04)	0.48
Total years of experience	8.36	9.21	0.85 (0.89)	0.34
Years of experience in the HV Program	1.91	2.00	0.08 (0.16)	0.61
<i>Supervisors' Characteristics</i>				
Number of supervisors	0.64	0.55	-0.09 (0.15)	0.56
Has higher education	0.29	0.28	-0.01 (0.04)	0.89
<i>Community Health Workers' Characteristics</i>				
Number of CHW	11.41	12.42	1.01 (1.24)	0.41
Has higher education	0.17	0.14	-0.03 (0.03)	0.30
<i>Panel C: Children characteristics</i>				
Number of health facility check-ups	5.27	5.25	-0.02 (0.06)	0.74
Number of times family collects iron supplements	5.55	5.56	0.00 (0.14)	0.98
Anemic at 6 and/or 12 months	0.11	0.12	0.01 (0.01)	0.45

Notes: Panel A reports district-level socioeconomic characteristics. Panel B summarizes characteristics of managers, supervisors, and Community Health Workers involved in the Home Visit Program. Panel C presents baseline child health and service-use indicators.

TABLE A.4 Municipality Attrition at Endline

	Attrited (1 = not re-surveyed)
Mixed incentive	0.027 (0.032)
Control mean	0.156
Observations	539

Notes: The dependent variable is an indicator =1 if the municipality could not be re-surveyed at endline. Regression coefficients are based on an OLS model. Standard errors are clustered at the district level in parentheses. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.5 Personnel Turnover by Treatment Status

	(1) Manager/supervisor	(2) Health facility staff
Mixed incentive	0.012 (0.007)	0.000 (0.002)
Control mean	0.006	0.002
Magnitude of the effect (%)	191.8	0.3
Observations	934	1,749

Notes: This table assesses whether assignment to the mixed incentive contract affected personnel turnover during the RCT period. The unit of observation is the individual and includes municipal personnel (managers and supervisors) as well as health facility staff responsible for delivering anemia-related services to the Home Visit Program's target population. Turnover is measured using administrative employment records and is coded as one if an individual appears as employed in December 2023 but not in December 2024. Estimates are based on an OLS regression, with standard errors clustered at the district level. Statistical significance is indicated by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

B | INFORMATION CAMPAIGN ABOUT THE INCENTIVE SCHEME

The Ministry of Health held a [virtual/in-person] training session for municipalities to explain the operational rules of the incentive scheme for the period from August to December 2024. This training took place during August 2024. In addition, a virtual information campaign was launched on September 9th, 2024. By October 9th, 2024, all municipalities had accessed the campaign, though municipal managers continued to review the materials until October 20th, 2024.

The information campaign included both personalized and general content. Initially, once the municipality identified itself, it would receive details about the type of contract applicable for the period from August to December 2024 (Figure B.1). Municipalities in the Input-Based Incentive arm were informed that their contract would be based on two input indicators: i) the percentage of children who receive home visits, and ii) the percentage of pregnant women who receive home visits (Figure B.1a). The contract for the Output-Based Incentive arm, on the other hand, incorporated three indicators: i) the percentage of children who receive home visits, ii) the percentage of pregnant women who receive home visits, and iii) the percentage of children who are not anemic or have shown increased hemoglobin levels at six and/or twelve months of age (Figure B.1b).

Additionally, for each of the indicators, the corresponding performance floor (x_i) and ceiling threshold (\bar{x}_i) were provided. The campaign also explained the percentage contribution of each indicator i to the total payment P . In particular, it was indicated that the fulfillment of each indicator i contributed equally toward the total payment P (i.e., a 50-50% split in the input-based incentive contract, and 33.3-33.3-33.3% split for the mixed incentive contract). Municipalities were also provided with a straightforward explanation of the payment method (Equation 1):

- If they did not meet x_i for the indicator i , no payment would be made for that indicator
- If they met at least x_i but less than \bar{x}_i for the indicator i , they would receive a partial payment for that indicator
- If they reached or exceeded \bar{x}_i , they would receive the full potential payment for that indicator i

Finally, all municipalities, regardless of their treatment status, received infographics for the three indicators (Figure B.2).²⁰ These infographics explained details on the estimation of the indicators (including clear examples), as well as other rules on the implementation of the Home Visit Program.

²⁰All the infographics can be found [here](#).

FIGURE B.1 Example of contracts – Indicators and Thresholds.

Para el Tramo II, la **MUNICIPALIDAD DE EL CENEPA** será evaluada en base a una serie de indicadores. Cada uno de estos indicadores aporta un porcentaje específico al logro del Monto Máximo correspondiente al Compromiso 1. Además, cada indicador cuenta con sus propias vallas: un Umbral Mínimo y una Meta Máxima.

A continuación, se presentan los indicadores para tu municipalidad junto con sus respectivas vallas y contribuciones:

Indicador	Umbral Mínimo	Meta Máxima	Contribución del Indicador
Indicador de producto 1.2: Porcentaje de niñas y niños hasta los 12 meses de edad que reciben visitas domiciliarias oportunas y consecutivas	85%	92%	50%
Indicador de producto 1.3: Porcentaje de gestantes que reciben visitas domiciliarias oportunas y completas por actor social a partir del II trimestre del embarazo	87%	92%	50%

Fuente: Anexo B1 de la RD N° 0027-2024-EF/50.01 y Anexo del Decreto Supremo N° 132-2024-EF.

Nota importante:

Para cada indicador podrían darse 3 situaciones:

Situación	Resultado
No superas el umbral mínimo	No recibes ningún incentivo
Superas el umbral mínimo, pero no alcanzas la meta máxima	Recibes un incentivo parcial
Superas la meta máxima	Obtienes el incentivo completo

(a) Input-based incentive

Para el Tramo II, la **MUNICIPALIDAD DE LIMA** será evaluada en base a una serie de indicadores. Cada uno de estos indicadores aporta un porcentaje específico al logro del Monto Máximo correspondiente al Compromiso 1. Además, cada indicador cuenta con sus propias vallas: un Umbral Mínimo y una Meta Máxima.

A continuación, se presentan los indicadores para tu municipalidad junto con sus respectivas vallas y contribuciones:

Indicadorx	Umbral Mínimo	Meta Máxima	Contribución del Indicador
Indicador de resultado 1.1: Porcentaje de niñas y niños de 6 y 12 meses sin anemia y/o con incremento de hemoglobina	34%	48%	33.3%
Indicador de producto 1.2: Porcentaje de niñas y niños hasta los 12 meses de edad que reciben visitas domiciliarias oportunas y consecutivas	85%	85%	33.3%
Indicador de producto 1.3: Porcentaje de gestantes que reciben visitas domiciliarias oportunas y completas por actor social a partir del II trimestre del embarazo	87%	92%	33.3%

Fuente: Anexo B1 de la RD N° 0027-2024-EF/50.01 y Anexo del Decreto Supremo N° 132-2024-EF.

Nota importante:

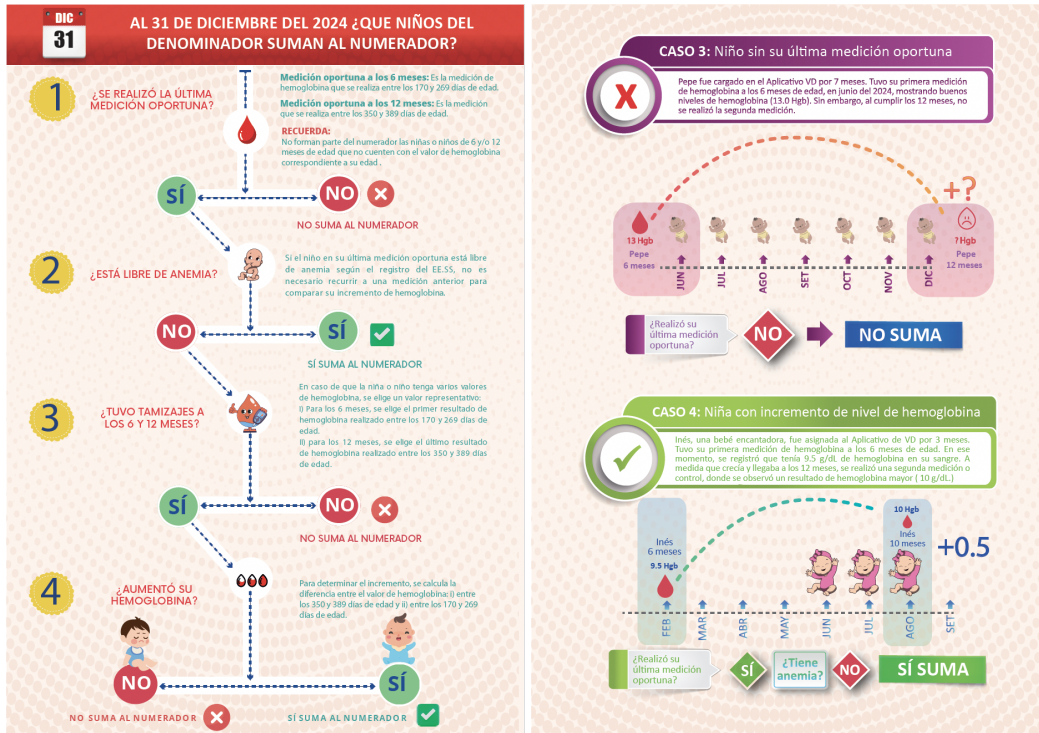
Para cada indicador podrían darse 3 situaciones:

Situación	Resultado
No superas el umbral mínimo	No recibes ningún incentivo
Superas el umbral mínimo, pero no alcanzas la meta máxima	Recibes un incentivo parcial
Superas la meta máxima	Obtienes el incentivo completo

(b) Mixed incentive

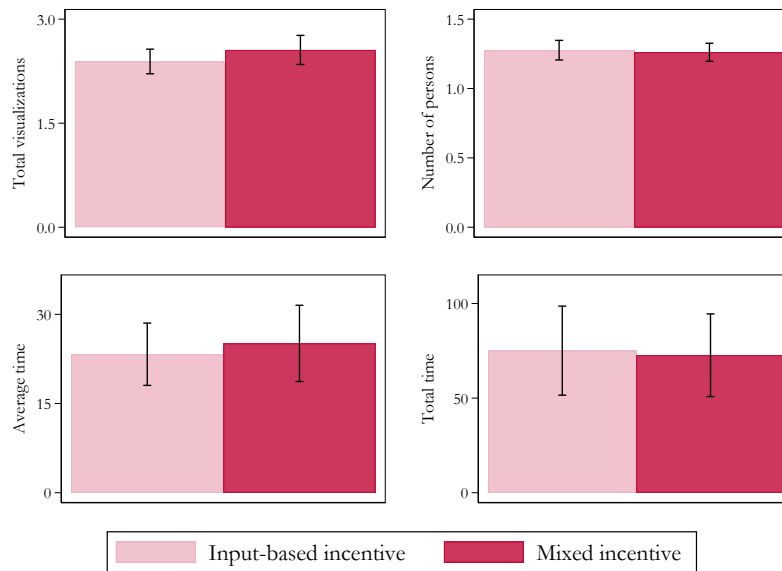
Notes: These infographics illustrate the indicators, thresholds, and incentive rules for each contract type. For the Input-Based Incentive contract, municipalities are evaluated on two input indicators, while the Output-Based Incentive contract adds an outcome indicator on child anemia. Each infographic shows how municipalities can receive no incentive, a partial incentive, or the full amount.

FIGURE B.2 Examples of infographics.



Notes: These infographics illustrate the sequential criteria used to determine which children are included in the numerator for the municipal anemia indicators.

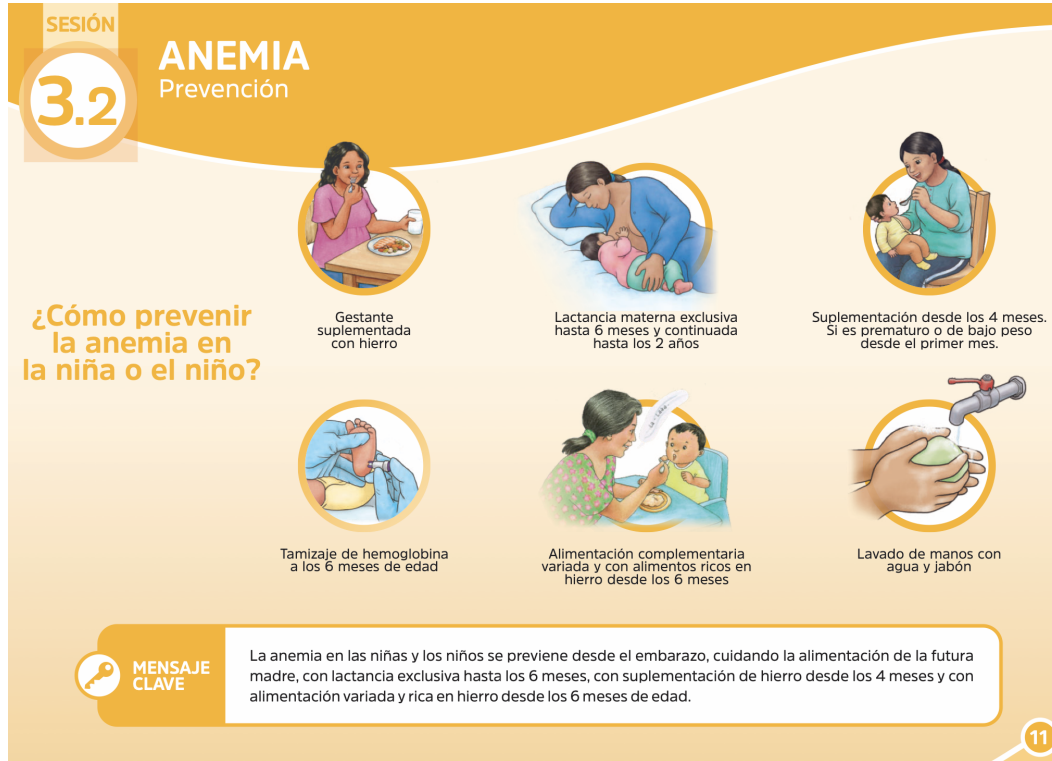
The information campaign was delivered via Qualtrics, enabling the tracking of key metrics such as views, participation, and time spent on materials. In rural municipalities, an average of one participant per municipality engaged with the content. These municipalities recorded an average of 2.5 views and a total review time of 74.1 minutes, averaging 24.1 minutes per participant (Figure B.3).

FIGURE B.3 Statistics from Information Campaign.

Notes: *Total visualizations* is the total number of times the information campaign materials were viewed by users in each district. *Number of persons* is the count of unique participants who accessed and engaged with the campaign content within each district. *Total time* is the aggregate time, measured in minutes, that all participants in a district spent reviewing the campaign materials. *Average time* is the average time in minutes that each unique participant spent interacting with the campaign content.

C | MATERIALS USED DURING HOME VISITS

FIGURE C.1 Example of Flipchart session’s content.



Notes: This content corresponds to Session 3.2 from the Home Visit Program’s flipchart (2024). The entire flipchart can be found [here](#).

FIGURE C.2 Example of Flipchart session's content.

SESIÓN

3.2 ANEMIA

Prevención

OBJETIVO

Lograr que la madre, padre y/o cuidador reconozcan las prácticas necesarias para prevenir la anemia en la niña o el niño.





¿Cómo prevenir la anemia en la niña o el niño?





MENSAJE CLAVE

La anemia en las niñas y los niños se previene desde el embarazo, cuidando la alimentación de la futura madre, con lactancia exclusiva hasta los 6 meses, con suplementación de hierro desde los 4 meses y con alimentación variada y rica en hierro desde los 6 meses de edad.

Conversemos

¿Qué observamos en las imágenes? ¿De qué manera podríamos prevenir la anemia?

Reflexionemos

¿De qué manera estás evitando que tu niña(o) presente anemia?

Expliquemos brevemente

Para prevenir la anemia en las niñas(os) debemos promover lo siguiente:

- Que la gestante acuda a sus controles de salud oportunamente lo que ayudará al diagnóstico y tratamiento oportuno de la anemia. Que la futura madre consuma alimentos variados, especialmente aquellos ricos en hierro.
- Que la niña(o) reciba solo leche materna de día y de noche durante los primeros 6 meses de edad. A partir de esta edad se inicia la alimentación complementaria y continúa con la lactancia materna a demanda hasta los 2 años de edad.
- Si el niño(o) tuvo bajo peso al nacer o es prematuro debe iniciar la suplementación al mes de nacido.

Busquemos un compromiso

Considerando la edad de tu niña(o) ¿Qué harías para que tu niña(o) no tenga anemia?

- Que las niñas(os) inicien la suplementación con hierro a partir de los 4 meses de edad, sin necesidad de un examen de hemoglobina, según las indicaciones del personal de salud.
- Realizar tamizaje de hemoglobina a la niña(o) para saber si tiene anemia. El primer tamizaje se realiza a los 6 meses de edad, y si la niña(o) no tiene anemia, se repite cada seis meses hasta los dos años.
- A los 6 meses de edad iniciar la alimentación complementaria ofreciendo una alimentación variada incluyendo alimentos de origen animal ricos en hierro.
- Que las familias realicen el lavado de manos con agua y jabón en los momentos clave para prevenir enfermedades infectocontagiosas.

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Notes: This content corresponds to Session 3.2 from the Home Visit Program's flipchart (2024). The entire flipchart can be found [here](#).