

Factors influencing the retention of health professionals in Lao People's Democratic Republic: A cross-sectional survey analysis

Sengthida Sivilay^{1,*}, Khampasong Theppanya¹, Bertrand Martinez-Aussel², Mick Soukavong^{3,4}, Mayfong Mayxay^{3,5,6,7}

¹ Department of Health Personnel, Ministry of Health, Vientiane, Lao People's Democratic Republic;

² Expertise France, Paris, France;

³ Unit for Health Evidence and Policy (UHEP), Institute of Research and Education Development, University of Health Sciences, Ministry of Health, Vientiane, Lao People's Democratic Republic;

⁴ Faculty of Medicine, University of Health Sciences, Ministry of Health, Vientiane, Lao People's Democratic Republic;

⁵ Lao-Oxford-Mahosot Hospital-Wellcome Trust Research Unit (LOMWRU), Microbiology Laboratory, Mahosot Hospital, Vientiane, Lao People's Democratic Republic;

⁶ Centre for Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, University of Oxford, Oxford, UK;

⁷ Saw Swee Hock School of Public Health, National University of Singapore, Singapore.

Abstract: Retention of qualified health professionals is critical for achieving universal health coverage (UHC) in Lao People's Democratic Republic (Lao PDR). Despite policy commitments, the public health sector continues to experience high turnover, especially among non-permanent staff. This study examined key factors influencing health professionals' intention to remain in government service. A cross-sectional survey was conducted from June to August 2023 among 1,873 public-sector health professionals in five provinces representing high and low-turnover areas. A structured questionnaire developed with the Department of Health Personnel (DHP) and administered *via* KoboToolbox collected data on demographics, employment status, income, motivation, and job satisfaction. Descriptive, bivariate, and multivariate logistic-regression analyses identified predictors of attrition intention. Overall, 37.4% of respondents reported having considered leaving the public sector. Contractual (AOR = 2.24, 95% CI: 1.57–3.21) and volunteer (AOR = 2.90, 95% CI: 1.90–4.44) staff were significantly more likely to intend departure than civil servants. Late salary or bonus payments (AOR = 2.25, 95% CI: 1.54–3.31) strongly increased attrition intent. Conversely, perceiving salary incentives and career-development opportunities as effective was protective (AOR = 0.35, 95% CI: 0.21–0.58, for moderately effective). Health professionals outside Vientiane Capital showed 35–40% lower odds of intending to leave. Retention in Lao PDR is driven by employment security, financial predictability, and professional-development opportunities. Regularizing contractual and volunteer positions, ensuring timely remuneration, and expanding career pathways are critical to implementing the national Human Resources for Health (HRH) Development Strategy 2021–2030 and achieving UHC by 2025.

Keywords: human resources for health, workforce retention, motivation, Lao PDR, universal health coverage

1. Introduction

Human resources for health (HRH) are the cornerstone of resilient health systems and a prerequisite for achieving universal health coverage (UHC) and Sustainable Development Goals (SDGs) (1). Globally, many low- and middle-income countries (LMICs) continue to face severe challenges in ensuring the availability, equitable distribution, and retention of qualified health professionals particularly in rural and underserved areas (2,3). Looking forward, global labour-market projections indicate that these gaps will persist without structural

reforms (4). In response, bundled strategies that combine financial and non-financial incentives, competitive remuneration, career development, supportive supervision, and enabling work environments are widely recommended (5).

The Lao People's Democratic Republic (Lao PDR) is a lower-middle-income, landlocked country in Southeast Asia with an estimated population of 7.5 million (6). The country is governed under a single-party system led by the Lao People's Revolutionary Party (LPRP), which plays an important role in public sector management and civil service promotion, including within the health

sector. Healthcare is predominantly delivered through the public system, especially in rural areas where private facilities are limited (7). Most health professionals are civil servants, but due to quota constraints, a substantial proportion estimated at over 20% are contractual or volunteer staff employed temporarily at government facilities. These groups often receive lower pay, limited social protection, and fewer opportunities for advancement, which significantly affects motivation and retention.

The national health workforce is monitored annually by the Ministry of Health; the Health Workforce Annual Report 2022 provides the latest consolidated administrative overview used for planning and budgeting (8). The national health workforce density remains among the lowest in the region, with 1.51 doctors, nurses, and midwives per 1,000 population, far below the WHO threshold of 4.45 per 1,000 required for essential service coverage (9). This absolute shortage is compounded by geographic maldistribution, with urban centers such as Vientiane Capital attracting a disproportionate share of qualified staff, leaving rural and remote districts underserved.

Recognizing these systemic challenges, the Government of Lao PDR has prioritized HRH within its national development agenda. The Human Resources for Health Development Strategy 2021–2030 (HRHDS) outlines five core objectives: strengthening HRH governance, meeting workforce demand, enhancing quality, improving distribution and retention, and boosting performance and productivity (10). This national strategy aligns with regional UHC and SDG frameworks articulated by WHO's Western Pacific Regional Office (11). It directly supports the Health Sector Reform 2021–2030, the 9th Health Sector Development Plan 2021–2025, and the National Socio-Economic Development Plan, all of which emphasize primary health care, service quality, and equitable access.

Within the broader national framework, the LPRP's "Four Breakthrough Strategy" and Resolution No. 04/CC (2021) highlight human resource development as essential for achieving Least Developed Countries (LDC) graduation by 2026 and UHC by 2025. These policy documents call for a skilled, ideologically strong, and geographically balanced health workforce, aligning with Lao PDR's long-term vision for a resilient health system.

A seminal study conducted in Lao PDR in the early 2010s identified health workers' preferences for bundled incentives including salary, promotion to permanent staff, housing, transportation, and further study opportunities thus shaping the first generation of national retention measures (12). More than a decade later, the country faces new economic and workforce realities: inflation, fiscal austerity, and the lingering impacts of the COVID-19 pandemic have further undermined job security and satisfaction. Despite progress in HRH planning, limited empirical evidence exists on the current

determinants of health worker retention and their relative magnitude in the post-pandemic context (13,14).

Beyond ethical and service-delivery implications, poor health-worker retention has significant economic consequences. Replacing an experienced health professional can cost 0.5–2 times their annual salary when recruitment, induction, and productivity loss are considered (15). In settings such as Lao PDR, where training pipelines are limited and external scholarships expensive, each departure represents a loss of scarce public investment. Strengthening retention therefore safeguards both continuity of care and return on educational investment, ensuring that the resources allocated to training institutions, pre-service programs, and donor-funded scholarships translate into sustained health-system capacity. Understanding what motivates staff to stay is thus not only a human-resources priority but also a fiscal and governance imperative for the country's long-term resilience.

This study aims to identify key factors influencing health professionals' intention to remain in or leave the public sector in Lao PDR and to generate evidence-based recommendations that can inform the implementation of the HRH Development Strategy 2021–2030, particularly its objective on equitable distribution and retention.

2. Materials and Methods

2.1. Study design and setting

This cross-sectional survey was conducted between June and August 2023 among health professionals employed in public health facilities across five provinces of Lao PDR: Luang Prabang, Champasak, Sekong, Vientiane Province, and Xiengkhuang (Figure 1). These provinces were purposively selected to represent areas with the highest and lowest staff turnover rates over the past five years, as reported by the Ministry of Health. The study aligns with the Human Resources for Health Development Strategy 2021–2030, particularly its goal of improving distribution and retention of health professionals.

2.2. Sampling and participants

The target sample size was 1,650 respondents, calculated to provide a nationally representative estimate of retention-related factors among approximately 19,316 public-sector health workers, at a 95% confidence level, with a $\pm 2.5\%$ margin of error, and assuming a 10% non-response rate. Stratified sampling was applied across three health system tiers (central, provincial, and district hospitals, as well as health centres and training institutions). Within each stratum, facilities were selected proportionally to staff size, and all eligible health professionals were invited to participate.

The sample size ($n = 1,650$) was derived using the

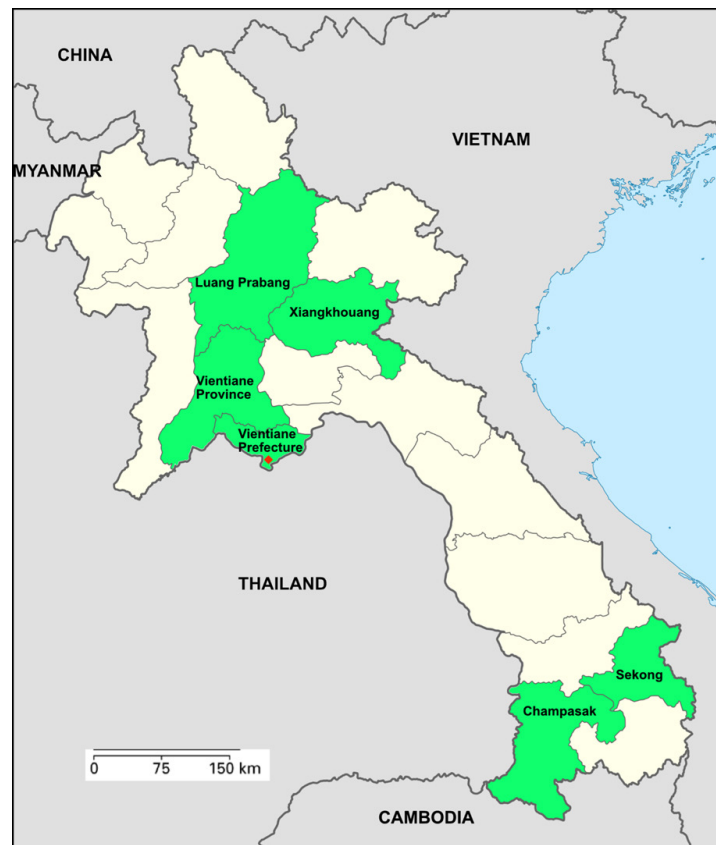


Figure 1. Map of Lao PDR and surveyed provinces.

single-proportion formula $n = Z^2 p (1-p) / d^2$, with $p = 0.5$ (maximum variability), $Z = 1.96$ for 95% confidence, and $d = 0.025$. Data quality was verified daily by provincial coordinators who cross-checked completeness and logic consistency within KoboToolbox. Outliers and duplicates were reviewed manually before export to STATA 16.0. Data were then cleaned using automated scripts (missing-value flagging, range validation) to ensure analytic reliability.

A total of 1,873 valid responses were received, representing a response rate of 114% overall (range 68–187% by province). Unique KoboToolbox logins prevented duplicate entries, and daily consistency checks by provincial coordinators ensured data quality. Although the calculated target was 1,650, participation was open to all eligible public-sector health workers present at selected facilities during data collection. After dissemination through provincial coordination channels, more health professionals volunteered to participate than initially projected; all eligible respondents were allowed to complete the questionnaire. The final sample ($n = 1,873$) therefore reflects higher-than-anticipated voluntary participation rather than duplication or sampling error.

2.3. Questionnaire development

The survey was designed by the research team in

consultation with the Department of Health Personnel and international HRH experts. It covered: *i*) Demographic and professional characteristics; *ii*) Employment status and financial conditions; *iii*) Motivation, incentives, and job satisfaction; and *iv*) Workplace environment and occupational health.

Draft questions were reviewed for content validity by a panel of five HRH specialists and pre-tested among 30 frontline health professionals from non-study facilities. Feedback was used to refine language, layout, and scale clarity. The final Lao-language questionnaire was self-administered electronically using KoboToolbox, with optional facilitator support at each site.

2.4. Data collection and ethical considerations

Ethical approval was granted by the Lao National Ethics Committee for Health Research (Approval No. 51/NECHR, 29 April 2024). Participation was voluntary and anonymous. Informed consent was obtained electronically *via* a mandatory checkbox prior to survey access. No personal identifiers were collected, and respondents could withdraw at any time without consequence.

2.5. Data analysis

All responses were exported to STATA 16.0 for

analysis. The process included: *i*) Descriptive statistics to summarize respondent characteristics; *ii*) Bivariate analysis using χ^2 tests and unadjusted odds ratios to explore associations with intention to leave; and *iii*) Multivariate logistic regression to identify independent predictors of attrition intention.

Three model specifications were compared: *i*) a comprehensive model (demographic, occupational and perceptual factors); *ii*) a structural model (demographic and employment characteristics); and *iii*) a perceptual model (incentive-related factors).

Model fit was assessed using the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Hosmer-Lemeshow goodness-of-fit test. Results are presented as adjusted odds ratios (AOR) with 95% confidence intervals (CI), with statistical significance set at $p < 0.05$.

Internal consistency of the perceived effectiveness scales was assessed using Cronbach's alpha. The overall scale (10 items) yielded $\alpha = 0.933$, indicating excellent internal reliability. At the subscale level: financial incentives subscale (additional salary/bonuses, housing, transportation; $\alpha = 0.831$, 3 items), career development subscale (training/education, career advancement; $\alpha = 0.865$, 2 items), and work environment subscale (colleague satisfaction, working environment, Party membership, achievement certificates, family support;

$\alpha = 0.885$, 5 items). All values exceed the accepted threshold of $\alpha \geq 0.70$ for health survey instruments, confirming strong internal consistency of the Lao-translated tool.

3. Results

3.1. Survey participation and representativeness

A total of 1,873 valid responses were received, representing 114% of the initially calculated target sample size overall. This reflects higher-than-anticipated voluntary participation among eligible health professionals within selected facilities. Provincial participation ranged from 68% (Luang Prabang) to 187% (Xiengkhouang). Duplicate responses were automatically blocked through KoboToolbox identifiers.

Respondents represented a broad mix of cadres and facilities (Figure 2), roughly mirroring the national composition of the public-sector health workforce (DHP 2024). The proportion of civil servants (77.9%), contractual staff (10.8%), and volunteers (11.3%) is consistent with national averages, confirming good representativeness.

3.2. Demographic and professional characteristics

As summarized in Table 1, most participants were female

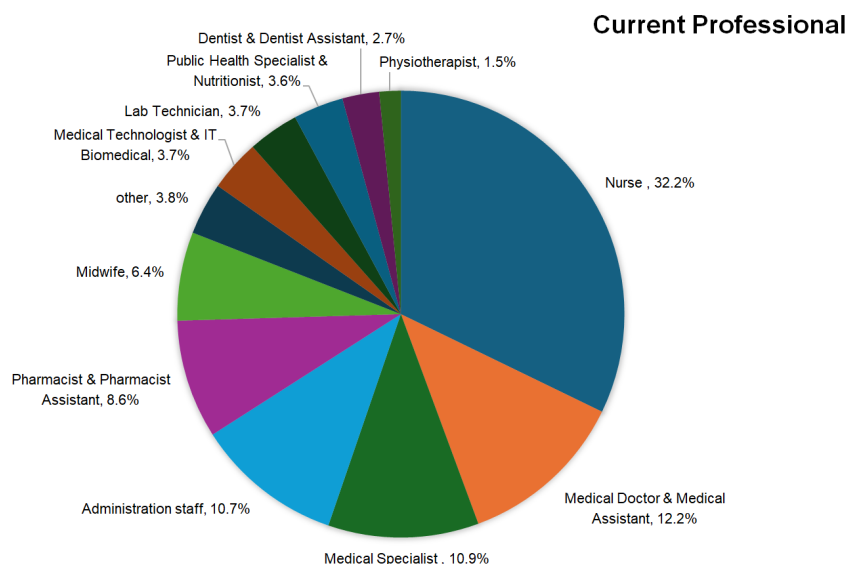


Figure 2. Workplace distribution of respondents across different types of professionals.

Table 1. Demographic and employment characteristics of respondents ($n = 1,873$)*

Characteristic	<i>n</i> (%)
Gender: Female / Male	1,305 (69.7) / 558 (29.8)
Age (years): 18–30 / 31–44 / 45–63	360 (19.2) / 969 (51.7) / 544 (29.0)
Ethnicity: Lao-Tai / Others	1,775 (94.8) / 98 (5.2)
Employment status: Civil Servant / Contract / Volunteer	1,459 (77.9) / 203 (10.8) / 211 (11.3)
Marital status: Married / Single / Other	1,409 (75.2) / 393 (21.0) / 71 (3.8)

Data Source: Retention Survey 2023. *condensed version; full table retained in Supplementary Data (<https://www.ghmopen.com/site/supplementaldata.html?ID=121>).

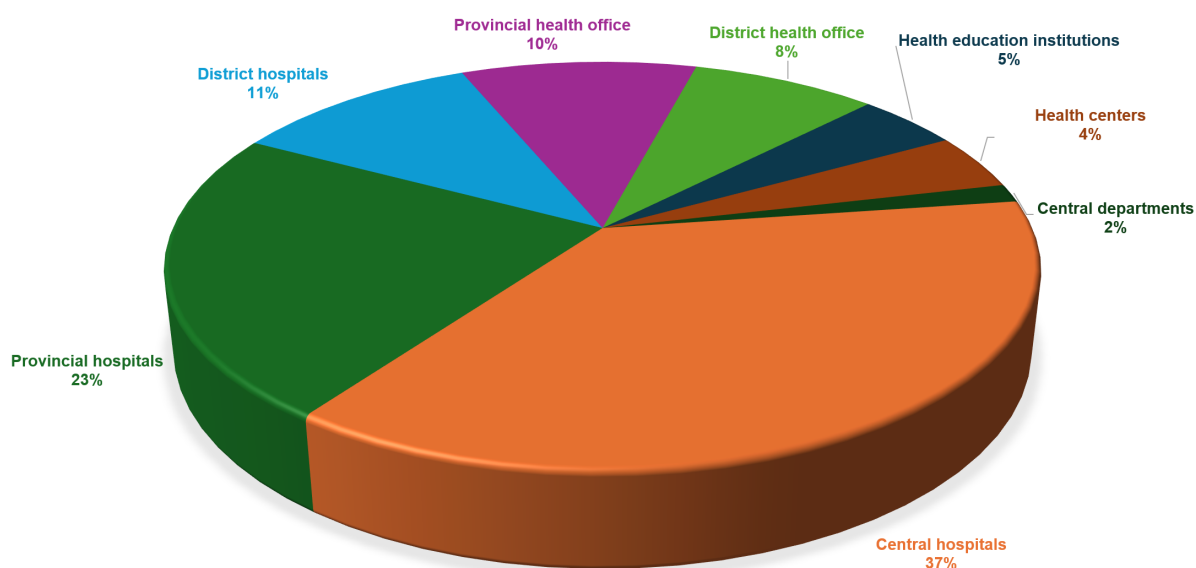


Figure 3. Workplace distribution of respondents across different types of health facilities in Lao PDR, including central, provincial, and district hospitals, health centers, and education institutions.

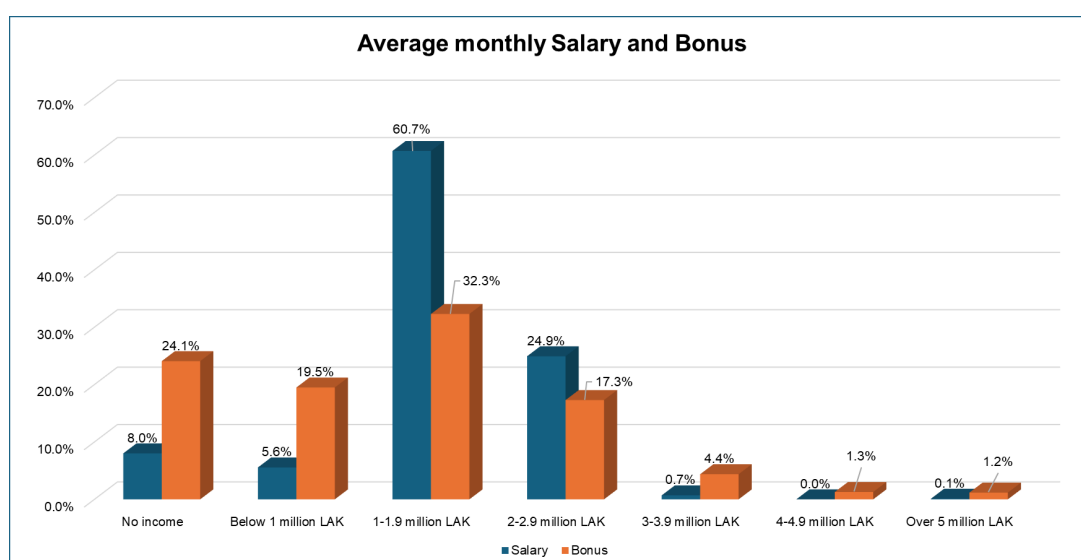


Figure 4. Average monthly salary and duty bonus received by respondents. Most earned between 1–1.9 million kip in salary, with substantial variation in bonus receipt.

(69.7%), aged 31–44 years (51.7%), and of Lao-Tai ethnicity (94.8%). A large majority were married (75.2%).

In terms of professional status, civil servants constituted 78%, while contractual and volunteer staff accounted for approximately 11% each. Respondents were distributed across central (37%), provincial (23%), and district hospitals (11%), as well as health centres (4%) and educational institutions (5%) (Figure 3).

3.3. Income, payment delays, and secondary employment

Median monthly salary was approximately 1.0 to 1.9 million kip (about 50 to 95 USD). Only 8% reported receiving no regular salary (Figure 4). Nearly one-third

(32%) received a duty or hardship bonus, and 85% experienced delays in bonus payments; 36% reported delayed salaries (Figure 5). For international readers, 1 million Lao kip was approximately 50–52 USD in 2023, while the national poverty line was about 12 USD per person per month.

Between 2022 and 2024, Lao PDR experienced cumulative inflation exceeding 30%, significantly eroding purchasing power. During this period, fuel and food prices rose sharply, while public-sector salary scales remained nominally unchanged. Thus, real income declined substantially, intensifying financial push factors (18).

About 18% held part-time private-sector jobs, which is permitted under Lao civil-service rules, primarily to

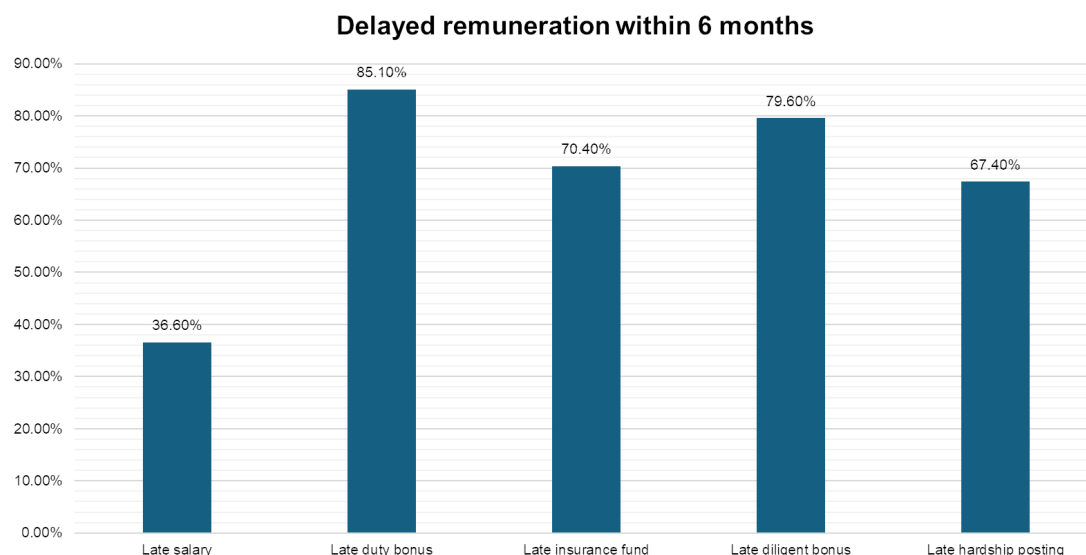


Figure 5. Proportion of respondents who experienced delayed remuneration—including salary, duty bonus, hardship allowances, and insurance refunds—within the past six months.

Table 2. Perceived effectiveness of incentives for public-sector retention*

Incentive Factor	Strongly / Definitively Effective (%)	Not Effective (%)
Additional salary / bonuses	53.5	17.1
Career advancement	58.4	9.7
Education / training	57.7	9.6
Opportunity to join Party	54.9	18.1
Housing support	43.7	24.2
Transportation allowance	45.8	23.1

*condensed version; full table retained in Supplementary Data (<https://www.ghmopen.com/site/supplementaldata.html?ID=121>).

supplement low and unpredictable income.

3.4. Training and professional development

Within the preceding year, 58% had received at least one in-service training, whereas 24% had never received any. Most respondents (47%) ranked education or training opportunities among their top three motivators to remain in public service.

3.5. Intention to leave and main reasons

Overall, 37.4% of respondents reported having considered leaving the public sector during the past 12 months. The most common reasons were insufficient income (81%), limited career advancement (19%), and lack of transport or housing allowances (about 15%). A small proportion (6%) mentioned lack of opportunity to join the Lao People's Revolutionary Party, which remains a traditional pathway for promotion in government service.

3.6. Motivational factors

Table 3. Adjusted odds ratios of factors associated with intention to leave the MOH (Lao PDR)

Predictor	AOR (95 % CI)	<i>p</i>
Contractual vs. civil servant	2.24 (1.57–3.21)	< 0.001
Volunteer vs. civil servant	2.90 (1.90–4.44)	< 0.001
Late salary / bonus payment	2.25 (1.54–3.31)	< 0.001
Middle region vs. capital	0.65 (0.45–0.93)	0.017
Southern region vs. capital	0.61 (0.43–0.86)	0.004
Northern region vs. capital	0.60 (0.44–0.82)	0.001
Perceived effectiveness of salary incentive (ref: Not Effective)		
Little Effective	0.53 (0.35–0.79)	0.002
Moderately Effective	0.35 (0.21–0.58)	< 0.001
Definitively Effective	0.39 (0.23–0.65)	< 0.001
Strongly Effective	0.52 (0.33–0.81)	0.004
Perceived effectiveness of transport incentive (ref: Not Effective; non-significant levels omitted)		
Definitively Effective	1.69 (1.04–2.73)	0.034
Strongly Effective	2.55 (1.61–4.06)	< 0.001
Perceived effectiveness of Party-membership incentive (ref: Not Effective; non-significant levels omitted)		
Definitively Effective	0.56 (0.36–0.86)	0.008
Strongly Effective	0.57 (0.37–0.86)	0.007

Model statistics: $n = 1\,362$; $R^2 = 0.088$; LR $\chi^2(25) = 155.6$; $p < 0.001$.

Perceived effectiveness of different incentives is summarized in Table 2. Financial incentives were the strongest motivators, with 42% rating additional salary or bonuses as "strongly effective". Career development (35%) and training (34%) followed closely. Housing and transport allowances were least influential.

3.7. Predictors of intention to leave

Multivariate analysis ($n = 1,362$; see Table 3) identified

several independent predictors of intention to leave: contractual status (AOR = 2.24, 95% CI: 1.57–3.21); volunteer status (AOR = 2.90, 95% CI: 1.90–4.44); delayed salary or bonus payments (AOR = 2.25, 95% CI: 1.54–3.31); regional location outside the capital (Middle region AOR = 0.65, 95% CI: 0.45–0.93; Southern region AOR = 0.61, 95% CI: 0.43–0.86; Northern region AOR = 0.60, 95% CI: 0.44–0.82); perceived salary incentives as effective (AOR = 0.35, 95% CI: 0.21–0.58; see Table 3 for all levels); perceived transport incentives as effective (AOR = 2.55, 95% CI: 1.61–4.06; see Table 3 for all levels); and positive perception of Party-membership incentives (AOR = 0.56, 95% CI: 0.36–0.86).

The positive association between perceived transport incentives and intention to leave likely reflects dissatisfaction among those who rely on such allowances, rather than genuine motivational impact. This association is confirmed in bivariate analysis chi-square test ($p = 0.004$): 42.8% of respondents rating transport support as "Strongly Effective" reported an intention to leave the highest proportion across all effectiveness categories and higher than those rating it "Not Effective" (39.3%). Among respondents rating transport support as "Strongly Effective" ($n = 568$), only 6.0% commuted more than 60 minutes, while 33.3% commuted 20–60 minutes daily. This suggests the elevated attrition intent reflects the cumulative financial burden of sustained moderate commuting on salaries of 1.0–1.9 million LAK per month, rather than extreme commute distance alone. Transport support thus functions as a proxy for financial strain and logistical vulnerability.

3.8. Qualitative feedback

Open-ended responses reinforced the quantitative findings. Participants prioritized: *i*) Timely and fair compensation; *ii*) Career advancement and continuing professional development; and *iii*) Transparent, responsive management. Representative quotes such as "*We need salary on time and training for promotion*" and "*Volunteers should have a quota after years of service*" illustrate recurring themes.

4. Discussion

This nationally representative survey provides updated evidence on the determinants of health-worker retention within the Lao public-sector health system. It highlights how employment insecurity, delayed remuneration, and limited professional-development opportunities remain the dominant factors driving attrition, while financial stability, career progression, and Party-linked promotion prospects serve as protective influences.

4.1. Employment status and job security

Employment status emerged as the most powerful

predictor of intention to leave. Contractual and volunteer staff were two to three times more likely to consider departure than civil servants, reflecting differences in salary, benefits, and advancement pathways. Similar findings have been reported across other LMICs, where non-permanent health professionals experience lower motivation and weaker institutional attachment (16).

In Lao PDR, these disparities are accentuated by limited government quotas for permanent posts, leaving many qualified staff in prolonged temporary positions. Regularization of long-serving contract and volunteer health professionals would therefore represent a key structural reform to stabilize the workforce.

A structural contributor to volunteer attrition is the civil-service quota system. Many volunteers remain on unofficial "waiting lists" for permanent government positions for several years, without clear timelines or transparent conversion criteria. This prolonged uncertainty weakens institutional attachment and creates parallel labor markets within the public sector. Addressing this bottleneck requires coordinated quota expansion and transparent merit-based regularization mechanisms.

4.2. Financial factors

Timely and predictable payment of salaries and bonuses was strongly associated with retention. Given that over one-third of respondents reported remuneration delays and most earned between 1.0–1.9 million kip (USD 50–95) per month, even short interruptions can severely affect livelihoods. Global evidence indicates that payment regularity can be as motivating as salary level itself (17).

The strong association between delayed remuneration and intention to leave (AOR = 2.25) appears to be driven primarily by irregular payment of duty bonuses rather than base salary. Duty bonuses are recorded quarterly at facility level and submitted to Provincial Health Offices for validation and approval before disbursement. Reported delays suggest administrative bottlenecks at the provincial approval stage rather than systemic payroll failure. Because these bonuses constitute a meaningful income supplement for many staff, irregular processing undermines income predictability and trust in the system. Strengthening standardized submission timelines, digital tracking of quarterly bonus claims, and clearer provincial accountability mechanisms may therefore represent one of the most actionable short-term retention strategies without requiring major fiscal expansion. The high inflation experienced between 2022 and 2024 has further eroded real income in Lao PDR (18). This trend amplifies the importance of payroll modernization, transparent budgeting, and reliable payment mechanisms to restore trust in public employment.

4.3. Motivation and non-financial incentives

Perceived effectiveness of salary increases, career

advancement, and training opportunities correlated strongly with retention intention, confirming the enduring importance of bundled financial and non-financial incentives first identified in the 2013 Rockers *et al.* study (12). Similar patterns have been documented in other low-income settings, where motivation and performance-management interventions were shown to influence retention outcomes (19). These results reaffirm that professional growth opportunities—especially continuing education, continuing professional development, and clear promotion criteria—remain central to workforce motivation (1,10).

Conversely, housing and transport allowances were comparatively weak motivators. Although earlier national programs emphasized staff housing, the present findings suggest that housing stability matters indirectly: staff who already own homes show higher retention, but new construction programs alone may not be cost-effective. Supportive measures such as subsidized loans or rural housing allowances for early-career staff may yield better returns.

4.4. Institutional culture and Party membership

Approximately 6% of respondents cited limited opportunity to join the Lao People's Revolutionary Party (LPRP) as a discouraging factor. In the Lao civil service, Party membership often facilitates promotion and leadership eligibility. The observed association between positive perceptions of Party-membership incentives and lower attrition underscores the institutional dimension of motivation where recognition, affiliation, and influence can complement material rewards.

In the Lao administrative context, Party membership is not merely symbolic but linked to leadership eligibility, promotion pathways, and access to decision-making roles. Its protective association (AOR = 0.56) suggests that status-based and affiliation-based incentives function as institutional stabilizers. This reflects a governance structure where recognition, political integration, and career legitimacy reinforce retention alongside financial factors. Such dynamics are specific to single-party civil-service systems and should be interpreted within that institutional framework.

4.5. Geographic and contextual influences

Health professionals outside Vientiane Capital demonstrated 35–40% lower odds of intending to leave, suggesting that rural or provincial postings can foster greater job stability when adequate local support and community ties exist. Comparable experiences from Cambodia, Vietnam, and Senegal show that integrated rural-posting packages, combining hardship allowances, mentoring, and career pathways, can sustain retention even in remote areas (20,21). These findings are consistent with WHO's global recommendations on rural

recruitment and retention (5).

4.6. Policy implications

International experience suggests that sustained retention gains require multi-level coordination rather than isolated incentive schemes. The WHO Global Strategy on Human Resources for Health (2030) and ASEAN Health Cluster 1 emphasize integrated actions combining education, regulation, and labor-market reforms. Neighboring countries have piloted relevant models: *i)* Thailand's rural recruitment track (CPIRD/ODOD) ties medical-school admission to post-graduation service in home provinces, supported by salary top-ups and mentorship (22). *ii)* Vietnam has introduced tier-based promotion linked to continuing-education credits and district-level quality indicators. *iii)* Cambodia's "Special Operating Agencies" approach grants facilities limited autonomy to manage allowances and performance-based incentives.

Adapting these models to the Lao context would mean aligning retention measures with existing civil-service and budget frameworks rather than creating parallel systems. For example, integrating retention incentives into the Public Finance Management Reform (PFMR) could secure recurrent funding streams, while collaboration with the Ministry of Education and Sports could strengthen pre-service alignment between training output and provincial demand (1,10).

The evidence also points to the importance of leadership and supervision quality. Strengthening middle-management capacity through mentorship, peer-learning networks, and transparent appraisal systems can amplify the effects of financial measures. Finally, establishing a national HRH observatory under the Department of Health Personnel would institutionalize data collection on workforce flows, enabling real-time monitoring of retention trends and policy impact. Such a mechanism would also facilitate alignment with regional HRH monitoring frameworks under ASEAN and WHO WPRO (3).

Based on these findings, we propose a set of targeted policy recommendations to support implementation of the HRH Development Strategy 2021–2030: *i)* Regularize employment of contractual and volunteer staff through clear criteria and phased quota integration; *ii)* Guarantee timely salary and bonus payments by strengthening payroll systems and decentralizing budget control; *iii)* Revise salary scales to reflect cost-of-living adjustments and professional competencies; *iv)* Expand career-development frameworks with transparent promotion criteria, leadership training, and equitable access to continuing professional development (CPD); *v)* Introduce targeted housing and financial-stability measures for early-career and rural staff; and *vi)* Foster positive organizational culture by valuing recognition, communication, and fair leadership, including clarity on Party-related advancement processes.

The Department of Health Personnel (DHP) and the Ministry of Health (MoH) have already initiated dialogue with relevant ministries: Finance, Home Affairs, and Education, to explore alignment of salary-scale revisions and quota regularization within the forthcoming HRH mid-term review.

4.7. Practical implications

For implementation, the Ministry of Health could prioritize three quick-win interventions: *i*) Payroll reliability: introduce electronic salary disbursement *via* the national Treasury platform to eliminate delays; *ii*) Career-path communication: publish transparent promotion and quota-conversion criteria accessible to all provinces; and *iii*) Retention micro-grants: pilot small facility-level funds enabling local recognition awards or hardship support, fostering ownership and morale.

These low-cost, high-visibility measures could generate immediate credibility for the broader HRH Strategy 2030 while more structural reforms (salary-scale revision, quota expansion) are negotiated inter-ministerially.

4.8. Limitations

This study relied on self-reported data, which may reflect perception bias, and although sampling was broad, representation from private-sector health professionals was minimal. Nonetheless, the large sample size and coverage of five provinces provide robust insights for national policy. The multivariable model was based on 1,362 of 1,873 respondents, with 507 cases excluded due to missing values on the late bonus variable. Analysis of the missing data pattern revealed that missingness was concentrated among cadres without bonus entitlements: notably dentists (72%), public health specialists (40%), and pharmacists (41%) rather than reflecting random non-responses. Findings from the regression model should therefore be interpreted as applying primarily to duty-bonus-eligible cadres and may not fully capture attrition dynamics among specialist groups.

5. Conclusions

This study provides the first post-pandemic, nationally representative assessment of the factors shaping health-worker retention in the Lao public sector. It reveals that employment insecurity, delayed remuneration, and limited career advancement are the primary drivers of attrition, while financial stability, professional development, and organizational recognition act as protective factors.

Contractual and volunteer staff, who together represent more than one fifth of the public health workforce, face the highest risk of leaving. Regularizing their status and ensuring equal access to benefits will

be crucial for long-term workforce stability. Likewise, timely and transparent salary payments are essential to restore confidence in public employment and reduce reliance on secondary income sources.

Beyond financial measures, sustained attention to career pathways, fair leadership, and acknowledgment of staff contributions will reinforce motivation and professional identity. Implementing these reforms will directly support the Human Resources for Health Development Strategy 2021-2030 and contribute to the national goals of Universal Health Coverage by 2025 and LDC graduation by 2026.

Strengthening retention will require inter-ministerial collaboration between the Ministry of Health, Ministry of Finance, and Ministry of Home Affairs, accompanied by continued monitoring of workforce trends and staff satisfaction. Ensuring a competent, motivated, and equitably distributed health workforce is not only a technical priority but also a foundation for the resilience and equity of Lao PDR's health system.

Acknowledgements

The authors express their sincere gratitude to the human resources and administrative departments of participating hospitals, district health offices, health centers, and educational institutions for facilitating this study.

Funding: This study was financially and technically supported by the World Health Organization Regional Office for the Western Pacific (WHO WPRO), the WHO Lao Country Office, the Asian Development Bank, and the NUS Public Health Office in Lao PDR, Saw Swee Hock School of Public Health, National University of Singapore.

Conflict of Interest: The authors have no conflicts of interest to disclose.

References

1. World Health Organization. Global strategy on human resources for health: Workforce 2030. <https://www.who.int/publications/i/item/9789241511131> (accessed October 1, 2025).
2. World Health Organization. A universal truth: No health without a workforce. https://www.who.int/publications/m/item/hrh_universal_truth (accessed October 1, 2025).
3. World Health Organization. Health workforce requirements for universal health coverage and the Sustainable Development Goals. <https://www.who.int/publications/i/item/9789241511407> (accessed October 1, 2025).
4. Liu JX, Goryakin Y, Maeda A, Bruckner T, Scheffler R. Global health workforce labour-market projections for 2030. *Hum Resour Health*. 2017; 15:11.
5. World Health Organization. Increasing access to health workers in remote and rural areas through improved retention. <https://www.who.int/publications/i/item/>

- increasing-access-to-health-workers-in-remote-and-rural-areas-through-improved-retention* (accessed October 1, 2025).
6. Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization: Lao PDR. Seattle: IHME, University of Washington; 2023.
 7. World Bank. Health financing update in Lao PDR: Technical note. <http://documents.worldbank.org/curated/en/099032024044285233> (accessed October 1, 2025).
 8. Ministry of Health, Lao PDR. Annual Report 2019-2020 for Health Workforce Distribution. <https://library.osobo.net/book/13> (accessed October 1, 2025).
 9. World Health Organization. Global Health Workforce statistics database. <https://www.who.int/data/gho/data/themes/topics/health-workforce> (accessed October 1, 2025).
 10. Ministry of Health, Lao PDR. Human resources for health development strategy by 2030 Lao PDR. https://extranet.who.int/uhcpartnershiplivemonitoring/system/files/doc_attachments/Eng_Human%20Resources%20for%20Health%20strategy_23Jan2024.pdf (accessed October 1, 2025).
 11. World Health Organization. Regional framework to shape a health workforce for the future of the Western Pacific. <https://www.who.int/westernpacific/publications/item/9789290620488> (accessed October 1, 2025).
 12. Rockers PC, Jaskiewicz W, Kruk ME, Phathamavong O, Vangkonevilay P, Paphassarang C, Phachanh IT, Wurts L, Tulenko K. Differences in preferences for rural job postings between nursing students and practicing nurses: Evidence from a discrete choice experiment in Lao People's Democratic Republic. *Hum Resour Health*. 2013; 11:22.
 13. Vangkonevilay P, Paphassarang C, Theppanya K, Phathamavong O, Rotem A. Lao People's Democratic Republic - Health human resource study: Analyses of health workforce retention and attraction policies. <http://documents.worldbank.org/curated/en/510181468184778548> (accessed October 1, 2025).
 14. Qian Y, Yan F, Wang W, Clancy S, Akkhavong K, Vonglokham M, Outhensackda S, Østbye T. Challenges for strengthening the health workforce in the Lao People's Democratic Republic: Perspectives from key stakeholders. *Hum Resour Health*. 2016; 14:72.
 15. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P. Motivation and retention of health workers in developing countries: A systematic review. *BMC Health Serv Res*. 2008; 8:247.
 16. Lehmann U, Dieleman M, Martineau T. Staffing remote rural areas in middle- and low-income countries: A literature review of attraction and retention. *BMC Health Serv Res*. 2008; 8:19.
 17. Henderson LN, Tulloch J. Incentives for retaining and motivating health workers in Pacific and Asian countries. *Hum Resour Health*. 2008; 6:18.
 18. Phimmahasay K, Davading S, Martins P, Manopiniwes C. Lao PDR economic monitor: Restoring macroeconomic stability to support recovery - Thematic section: Unlocking the potential of regional connectivity. <http://documents.worldbank.org/curated/en/099225306302234111> (accessed October 1, 2025).
 19. Dieleman M, Toonen J, Touré H, Martineau T. The match between motivation and performance management of health sector workers in Mali. *Hum Resour Health*. 2006; 4:2.
 20. Zhu A, Tang S, Thu NTH, Supheap L, Liu X. Analysis of strategies to attract and retain rural health workers in Cambodia, China, and Vietnam and context influencing their outcomes. *Hum Resour Health*. 2019; 17:2.
 21. Nagai M, Fujita N, Diouf IS, Salla M. Retention of qualified healthcare workers in rural Senegal: lessons learned from a qualitative study. *Rural Remote Health*. 2017; 17:4149.
 22. Wibulpolprasert S, Pengpaiboon P. Integrated strategies to tackle the inequitable distribution of doctors in Thailand: Four decades of experience. *Hum Resour Health*. 2003; 1:12.
-
- Received November 3, 2025; Revised March 4, 2026; Accepted April 13, 2026.
- Released online in J-STAGE as advance publication May 4, 2026.
- *Address correspondence to:*
 Sengthida Sivilay, Department of Health Personnel, Ministry of Health, Thadkhao village, Simuang road, Sisattanak district, Vientiane 01000, Lao People's Democratic Republic.
 E-mail: sengthida.sivilay@gmail.com