IMPACT OF RESULTS-BASED FINANCING ON HEALTH WORKER SATISFACTION AND MOTIVATION IN ZIMBABWE

Implications for program design and implementation

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Abstract: Provider incentives are targeted to improve health worker *outcomes*, yet the evidence captures their effect more in terms of *utilization* of services (and quality of care to some extent). This paper assesses the impact of a Results-based Financing (RBF) program in Zimbabwe on health worker satisfaction and motivation using a difference-in-differences method and health facility survey data. It also tries to underpin the causal pathways of these observed outcomes with qualitative information. Quantitative results show that health workers in RBF facilities had higher overall job satisfaction, particularly for compensation (8.436 points, on a maximum scale of 100; $p<0.05$). They reflected less motivation, specifically for teamwork, recognition, and facility leadership. Qualitative data, on the other hand, reveal a rather positive picture: in general, health workers were motivated with bonus from RBF, and beyond that, they expressed a sense of satisfaction for being better able to serve the community.

Although the overall impact evaluation indicated that the Zimbabwe RBF is high performing, certain design features of the program and their interaction with contextual factors could have explained these puzzling outcomes. Staff expressed their dissatisfaction over the following: reduced unit prices of incentivized services; the relative proportion of incentive amount to their tasks and that of peers; inadequate living accommodation; limited capacity of supervisors; restricted leadership ability of the head of facility; and 'burn-out' due to increased patient load. Conversely, they were positively motivated by improvements in working conditions and facility autonomy. To enable the RBF program to have a greater positive impact on human resources for health outcomes, some larger health system issues are important, such as availability of skilled workers. Within the control span of the program, scope for improvement includes revisiting the unit prices of services and allocation criteria of incentives in a context-specific and consensual

manner to ensure a satisfactory income for staff and facilities and improving the quality of supportive supervision.

Key words: Results-based financing, performance-based financing, health provider satisfaction and motivation, financial incentives, human resources for health, Zimbabwe.

Key messages:

- Quantitatively, RBF program in Zimbabwe was found to have improved health workers' satisfaction with reimbursement, but motivation appeared to be negatively affected.
- The qualitative information reveals a different picture, but it also provides possible explanations for the quantitative results, such as workers burnout, dissatisfaction with within facility bonus allocation, and quality of supervision from the district.
- More work needs to be done to understand and improve motivation of health workers in Zimbabwe, which is an important condition for sustainability of the program's documented success in increasing service coverage and quality of care.

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
DD	Double Difference
DHE	District Health Executive
EHT	Environmental Health Technician
IE	Impact Evaluation
HRH	Human resources in Health
HW	Health Worker
JSS	Job Satisfaction Survey
LMIC	Low- and Middle-Income Countries
MCH	Maternal and Child Health
MOHCW	The Ministry of Health and Child Welfare
MSQ	Minnesota Satisfaction Questionnaire
NGO	Non-Governmental Organization
PBF	Performance-Based Financing
PCN	Primary Care Nurse
PME	Process Monitoring and Evaluation
RBF	Results-Based Financing
RHC	Rural Health Center

INTRODUCTION

1. For many decades, health policy makers throughout low- and middle-income countries (LMICs) have been struggling with how to improve the performance of their health workforce.[1-2] Provider performance often leaves room for improvement. For example, adherence to clinical guidelines on managing health conditions, specifically maternal and child health, is shown to be low.[3] Providers are found to be absent from health facilities during normal working hours, and patient satisfaction on providers' responsiveness and behavior is also poor.[4-5] Thus improving provide performance is a prerequisite for improving quality of care and achieving the unmet health goals such as Millennium Development Goals 4 and 5.[3, 5]

2. Improving health workers' performance is challenging, however, given that it has multiple dimensions and that there are in turn many factors influencing these dimensions.[6-8] Quality of care, responsiveness to patients, and productivity—the key performance dimensions—are driven by the "can-do" and "will-do" factors. "Can-do" factors include skills and knowledge as well as working conditions; "will-do" factors refer to the degree of effort by health workers, driven by motivation, self-advocacy, or pressure from supervisors and peers.[6-8] While existing literature on human resources for health (HRH) is abundant on the "can-do" factors, empirical evidence is limited as to what exactly are inside the "will-do" box and how to get them to improve worker performance, especially in resource-poor settings with sub-optimal "can-do" conditions.[8] In the empirical evidence, motivation (a "will-do" factor) is the usual ultimate trigger for a health worker to perform.[8] However, a health worker's motivation to perform is also influenced by certain "can-do" factors, such as capacity to perform and the work environment.[6-8] Though not always proven, "job satisfaction" is a prompt—a combined result of "can-do" and "will-do" factors—that can heavily influence health worker motivation.[6-8] Therefore, attempts to improve health worker performance aim predominantly at stimulating health worker satisfaction and motivation and so improve their capacity to perform.

3. The recently emerged Results-based Financing (RBF) approach in global health has the potential to address this plethora of health worker performance challenges, especially satisfaction, motivation, and capacity to perform.[9] RBF—and in this paper, Performance-based Financing (PBF) on the supply-side—financially rewards health providers on verified improvement in performance. RBF provides two kinds of rewards at facility level: monetary rewards to providers; and financial incentives to facilities.[1] The latter can be considered a nonmonetary incentive to providers as their work environment (e.g. infrastructure, equipment and supplies) can be improved through a facility's financial rewards. RBF also provides autonomy to the frontline service providers in tackling their priority issues, pressures higher authority to enhance supportive supervision, and promotes a "drive for results" culture. Thus RBF aims to influence both "can-do" and "will-do" factors, primarily health worker satisfaction, motivation, and capacity to perform.

[1] For example, see www.rbfhealth.org for a number of programs supported by the Health Results Innovation Trust Fund.

RATIONALE AND AIM OF THE STUDY

4. The existing evidence does not provide much information on the impact of RBF on HRH outcomes. What is known is that RBF improves service provision and structural quality of care (e.g. equipment and supplies), largely, and process quality of care (e.g. adherence to clinical guidelines) to some extent.[10-14] It cannot be established that the first two are the indications of improved health worker performance alone, as several factors influence them.[11] For that reason it is vital to explore health worker satisfaction and motivation, the intermediate factors in improved performance. Although may not always be the case, the empirical evidence also indicates that performance incentives can sustain improved provider performance, if they retain a minimum level of provider satisfaction and motivation for a longer time.[15]

5. Given the paucity of evidence showing RBF's effect on HRH outcomes, this study empirically tests the effect of RBF on health worker satisfaction and motivation in Zimbabwe (a front runner RBF-experimented country globally) through a quasi-experimental evaluation. We also attempt to understand the causal pathway of RBF's influence on satisfaction and motivation. The results will inform the government of Zimbabwe's approach in its design and implementation of incentive schemes. The study will also contribute to the scant global literature detailing the impact of PBF on HRH outcomes in resource-poor settings. This study is built on the overall impact evaluation design of the Zimbabwe RBF program.

THE CONTEXT: ZIMBABWE HEALTH SYSTEM AND RBF PROGRAM

6. Zimbabwe is a landlocked country in Southern Africa with an estimated population of 13 million, of whom about 65 percent lives in rural areas.[16] Once a shining example of economic and human development in the African continent, Zimbabwe sunk into a major economic crisis in the 1990s resulting in damage to all socioeconomic sectors.[16] Even though some signs of recovery emerged toward the end of 2000s, the cash-deprived government is still struggling to deliver public services. Public expenditure is inadequate even to keep the government running as shown in the challenge of keeping stable and timely salary payment for civil servants.[16]

7. The decade-long economic crisis has left Zimbabwe's health sector devastated by multiple long-term impacts, one of the most serious being brain drain of health professionals.[17-19] Many qualified health workers emigrated to seek better incomes and working conditions, and those who stayed suffered from low motivation due to poor and sporadic salaries, run-down infrastructure, and a shortage of supplies. As a result, there is a severe shortage of skilled staff, aggravated by their suboptimal performance.

8. Vacancy rates were reported to be 52 percent among medical doctors, 57 percent among pharmacists, and 22 percent among senior management positions a few years ago.[17] A countrywide survey revealed that only 50 percent of women seeking antenatal care had their blood sample taken, less than 10 percent had their urine sample examined and only 12 percent of health workers provided adequate counseling on danger signs in pregnancy.[20] These all flag the need to boost motivation and performance of health staff.

9. With support from the Health Results Innovation Trust managed by the World Bank, in March 2012 Zimbabwe launched a PBF program in 18 out of 64 rural districts with the goal of improving the delivery of basic primary care services, with a focus on maternal and child health.[16] The program enlisted 415 health facilities, both public and faith-based, and covers a population of some 4.2 million. It offers a quarterly financial reward to health facilities based on their verified delivery of a well-prioritized, high-impact package of 16 maternal and child health services at rural health center level and five referral services at secondary hospital level. Participating facilities committed not to collect user fees for services already included in the RBF benefit package. Facilities could use 25 percent of the reward to incentivize staff and the remaining amount to improve service provision, such as purchasing drugs, fixing broken equipment, building a mother shelter, or installing a solar panel for electricity. The incentives are divided among individuals based on a formula that gives more weight to people working in higher positions, having longer tenure, and assuming more direct responsibility for the incentivized services (Annex 1).

10. After several years, the RBF program has shown to be a real game changer.[21] The midterm review conducted in May 2013 by the government and the World Bank revealed much enthusiasm for RBF among stakeholders at all levels of the health system, from the national Ministry of Health to frontline workers.[16] By giving providers much-needed funding, which the providers could decide how to use, RBF was said to have facilitated problem solving, encouraged innovation, and promoted a culture of delivering for results. RBF's 25 percent incentives to workers were deemed important to motivate staff to work hard, especially against the backdrop of erratic and low salary payment from the government.[21] Based on the positive experience of RBF in 18 rural districts under World Bank support, the government decided to roll out RBF in the remaining 46 rural districts.[16]

11. The overall impact evaluation, based on a quasi-experimental design and presented in detail in a companion report to this paper, largely confirmed the program's positive impact on service utilization.[22] For example, institutional delivery in RBF districts increased by 13.4 percentage points, or roughly 20 percent against a baseline rate of 68 percent in the control districts. The proportion of mothers having a postnatal checkup from a qualified provider increased by 26 percent, and the proportion of pregnant women receiving a urine test and tetanus injection also increased significantly. RBF facilities appeared to have better availability of some basic drugs and equipment.

12. This study on health workers' satisfaction and motivation is thus based on established evidence of a high-performing program, with performance being measured as population coverage and quality of care. The line of inquiry here is whether the program has also improved health worker satisfaction and motivation, which, as argued earlier, is one of the factors in good performance.

THE CONSTRUCTS: JOB SATISFACTION, EXTRINSIC MOTIVATION, AND INTRINSIC MOTIVATION

13. This section summarizes the literature review undertaken to define the concepts of "job satisfaction," "intrinsic motivation," and "extrinsic motivation"; and to map their prevailing measurement tools.

14. Different concepts exist for both job satisfaction and health worker motivation. According to the most widely used definition, job satisfaction is the extent to which employees like their work. It is essentially how employees feel about their job, and different aspects of their job.[23-24] The most common drivers of job satisfaction are nature of job (job content) and organizational context.[25] Although it is not conclusive, there is a strong possibility of job satisfaction affecting worker motivation.[26]

15. Worker motivation is defined as an individual's degree of willingness to exert and maintain an effort toward organizational goals.[26] Motivation is not a matter of the person alone, rather a consequence of the person–situation (work environment) interface, being influenced by the broader social context. However, this interface is ultimately modulated by certain psychological and cognitive processes of individuals (perceptions, assumptions, etc.) and hence motivation is person specific.[26] The level of worker motivation can be measured through intrinsic and extrinsic elements.[27] Intrinsic motivation refers to doing something that is inherently interesting or enjoyable, irrespective of the resource availability externally.[28] Intrinsically motivated behaviors are those in which there is no apparent reward except with the activity itself. Extrinsic motivation refers to doing something because it leads to a separable (or tangible) outcome.[28] Some researchers argue that it is hard to measure motivation directly—rather, only the determinants and consequences of motivation can be assessed.[7] Nor is the distinction between intrinsic and extrinsic motivation always straightforward.

16. There are two approaches to measure motivation: subjective (asking workers their own perceptions of motivation and what influences it); and objective (assessing consequences of motivation; e.g. effort or productivity can be measured by directly observing timeliness of health workers).[7] Though the latter is more accurate without bias, there are practical difficulties to be objective in data collection. To conclude, one can measure subjectively job satisfaction and factors affecting motivation (as they are subjective concepts); while motivation is measured objectively (i.e. effort or productivity).[7] Without assessing the effort of a staff member, his or her motivation cannot be validated.

17. While several tools exist to measure job satisfaction, The Job Satisfaction Survey 1996 is the commonly used assessment tool.[29] It captures many job related-themes such as compensation, teamwork, and work environment. Questions are both negative and positive directional and can be administered to one or a group of health workers. The Job Satisfaction Survey 1996 has often been tested and validated in Asian countries (e.g. Malaysia, Saudi Arabia, China) and a few African settings (e.g. Liberia). It is reported to be a reliable tool for two reasons in the assessments: the internal consistency coefficient of the scale was found out above the prescribed score of 0.80 and the test-retest coefficient was above the prescribed score of 0.70.

18. The Minnesota Satisfaction Questionnaire is a tool used to measure both satisfaction and motivation.[30] It has long- and short-format versions with several personal and organization-related themes. Though questions are only positive directional, it has been validated in several countries and is also known to be reliable. The Work Preference Inventory is another worker-motivation measurement tool, predominantly to capture intrinsic motivation.[27] It is also known as a reliable tool with both positive and negative directional questions.

POTENTIAL CAUSAL PATHWAYS: HOW CAN RBF INFLUENCE WORKER SATISFACTION AND MOTIVATION?

19. The prevailing behavioral economics literature on provider incentives and evidence from evaluation of RBF programs indicate that there does not seem to be a typical linear pathway in which financial incentives influence HRH outcomes.[31] When it comes to health worker satisfaction and motivation, there are a few intermediary factors that can potentially influence health worker perceptions to derive a level of their satisfaction and motivation, even though the causal chain is multifaceted.[31-32]

20. These causal factors mainly emanate from the design of a program (e.g. amount of incentive and prevalence of user fees) and its interplay with contextual factors.[31] The contextual factors consist of institutional factors such as autonomy, teamwork and workload; and individual factors. The latter comprise perception of providers; behavioral elements of stakeholders such as supervisors, health workers and patients; and capacity of supervisors and health workers. In the causal chain, a program's design features and the institutional factors are more visible, while the individual factors may not be always observable. However, in any given scenario, ultimately there is an equal chance for a health worker to derive his or her level of satisfaction and motivation purely on individual perceptions based on his or her comparative assessment of a particular past or present experience and the level of intrinsic motivation.[7]

21. The above causal factors (1 and 2) are paramount in a RBF program, as RBF is not simply about financial incentives to providers, rather it provides group incentives and intends to improve a whole facility's working conditions and performance.[9] In Zimbabwe for example, RBF design involves user fee abolition, which can augment patient load and staff workload (an institutional factor), gradually leading to staff burnout and affecting motivation (which also depends on individual capacity and perceptions).[16] Although RBF's design involves enhanced supervision from the district health authority, supervision can enhance health worker motivation only if it is regular and satisfactory, purely depending on institutional (or regulatory-framework) factors and individual (i.e. capacity and sincerity of supervisor) factors.[16]

22. Finally, user fee removal for the services in the RBF benefit package may also play a role in health workers' satisfaction and motivation. Health workers in general are altruistic, and the render them happy for being able to serve more people. On the other hand, there is a rather abundant literature on the negative effects of user fee removal or reduction on health personnel—medical and administrative staff— who struggled to keep up with large workload increases, drug-supply shortages, and overcrowded wards that accompany exemption policies.[17-19] In the case of Zimbabwe, drug supply shortage may be addressed by RBF payment, and increased workload goes

hand in hand with increased earnings. But staff burn out is a real possibility, and if too much, can backfire.

23. Derived from the literature on provider incentives and empirical evidence of RBF programs, we hypothesize the causal pathway of the RBF program's effect on health worker satisfaction and motivation as in the conceptual framework in Table 1 and explained further below.[6, 33-38] However, the direction of the net effect on satisfaction and motivation unarguably depends on how the program is being operated locally and how program features interact with contextual factors.

24. ***Financial incentives to workers: size matters.*** If the incentive is too small and unfair in proportion to workers' responsibilities and the relative share of their peers, it can reduce their intrinsic motivation. Conversely, if the incentive constitutes a substantial portion of base salary, it may pressurize them to work more so as not to lose the incentive.

25. ***Improved working and living conditions: the trajectory of RBF*** expects health facilities to invest their income on improving the working conditions, e.g. equipment and drugs, which better enable health workers to provide services for patients. When RBF funding is used for staff benefits (independent of bonus), such as building staff housing and a facility kitchen, we can expect the extrinsic satisfaction and motivation to increase.

26. ***Supervision from higher level and facility manager, and teamwork.*** The prevailing evidence is mixed on how supervision, teamwork influence health worker motivation.[6, 8, 42] If health workers perceive that through supervision their work gets attention, it is a positive scenario.[6] On the other hand, the "crowding out" theory claims that more monitoring can send a signal of distrust.[6] Some argue that crowding out will not happen if supervision is viewed as supportive and not controlling.[6] In addition, manager pressure is an important aspect that warrants assessment. RBF is a group-based incentive, meaning that line managers—as part of a team—will also receive a portion of the RBF bonus.[16] It is therefore possible that, to obtain a higher bonus, these managers will increase their supervision pressure on subordinates. In the same vein, peers can also exert pressure on each other to avoid free riders, which could undermine workers' intrinsic motivation. Positive teamwork and participatory approach, in contrast, can increase motivation.[6,42]

27. ***Improved autonomy and leadership in facility management:*** RBF expects facilities to have more autonomy in allocating their budget, spending facility income and sharing tasks.[16] However, such autonomy can be more with the head of facility than all cadres of staff.[24] There could be a mixed possibility of a health worker satisfied with this increased autonomy at the facility. Health workers may not often be satisfied with the way decisions are made on unit pricing of services and sharing of incentives.[24] They can be also influenced by the efficiency, attitude, and behavior of the head of facility.[24]

28. ***Increased patient workload and longer working hours:*** as said, if increased workload due to any reason augments staff earnings, they may be satisfied, but increased workload can also exhaust them physically and mentally.

29. ***Rapid changes in the facility functioning:*** some health workers may be ready to accept the rapid changes RBF brings to the facility (e.g. regulatory framework, workload), but others may not be.[42]

Table 1: The multiple causal pathways—Potential effects of Zimbabwe RBF program on health workers' satisfaction and motivation

RBF features	Effects on satisfaction and motivation
Financial incentive to workers	(+) if perceived as fair in comparison with the share of peers (-) if perceived as unfair in comparison with the share of peers (+) if perceived as right amount in proportion to responsibilities (-) if perceived as small/inappropriate in proportion to responsibilities (+) if perceived as a substantial share of their salary/earnings (-) if perceived as a nonsubstantial share of their salary/earnings
Enhanced supportive supervision (from the district health executive)	(+) if perceived as "supportive" (-) if perceived as "controlling"
Improved working and living conditions for staff	(+) if satisfactory improvements occurred (-) if satisfactory improvements did not occur
Improved autonomy in decision making	(+) if facility/head of facility has decision-making power in budget, routine facility functioning, task allocation, and fixing unit prices of services and incentives (-) if facility/head of facility has no such decision-making power (+) if a particular cadre of staff has decision-making power in task sharing and incentive sharing (-) if a particular cadre of staff has no such decision-making power
Teamwork and leadership of facility	(+) if head of facility is participatory, transparent, and impartial (-) if head of facility is not participatory, transparent, and impartial (+) if colleagues are encouraging, sharing, and participatory (-) if colleagues are not encouraging, sharing, and participatory (+) if head of facility is motivating, innovative, and efficient (-) if head of facility is not motivating, innovative, and efficient
User fee removal and bonus linked to output: Increased patient workload and longer working hours	(+) if earnings increase (-) if burnout
Rapid changes in the facility functioning	(+) if able to cope up with the rapid changes (-) if unable to cope up with the rapid changes
Net effect	Theoretically ambiguous (depends heavily on program operations and contextual factors)

METHODS

30. To evaluate the effect of RBF on health worker satisfaction and motivation in Zimbabwe, this study employed a quasi-experimental evaluation design, which consisted of two rounds (i.e. baseline and follow up) of quantitative surveys. In addition, it relied on a qualitative assessment (process monitoring and evaluation or PME) to triangulate the quantitative findings.

QUANTITATIVE SURVEYS

31. In the design we had 16 intervention districts (excluding the two front-runner districts that piloted RBF before its formal launch) and matched them with 16 control districts in the same provinces (giving two intervention and two control districts per province). District matching was based on characteristics such as population size of facility catchment area, proportion of staff positions filled, and previous trends in some key maternal and child health (MCH) outcomes. A facility survey had been carried out in December 2011–February 2012 before RBF was introduced, and another after two years of implementation, in May–August 2014. Both these surveys gathered information mainly on background characteristics of health workers, utilization of services, performance of workers, absenteeism, and their satisfaction and motivation. Ethical approval for the surveys was obtained from the Medical Research Council of Zimbabwe. Data collection was administered by two local survey firms separately for baseline and follow up. Further details on evaluation design, sampling, instruments and data management can be accessed from the Zimbabwe RBF Impact Evaluation Report 2015 (the "IE Report").[25]

32. The survey instruments consisted of a health facility questionnaire administered to the head of facility; and a health worker questionnaire administered to up to two staff providing MCH services. The former explored type and ownership of facilities, staff vacancies, infrastructure, availability of drugs and commodities, and volumes of key services provided. The latter gathered information on education and experience of staff, their motivation, job satisfaction, knowledge, work hours, and tasks performed. For the health worker interviews, sample sizes were 597 and 415 respectively for the baseline and follow-up surveys.

33. Data entered in CS Pro was transferred to Stata version 13.0 for cleaning and analysis. From the two surveys, a balanced panel of facilities was constructed, consisting of 80 RBF and 50 control facilities, of which 93 were rural health centers (RHCs) (Table 2). At each round, up to two health workers providing care on MCH services were randomly selected for interview in each facility. Therefore, although health facilities in the analytical sample were surveyed in both rounds, it is possible that some health workers within these facilities were interviewed only once, either at baseline or follow up. Compared with district hospitals, RBF incentivizes more services in RHCs. Therefore, in this study we limited our analytical sample to only health workers in RHCs, so as to assure a higher degree of homogeneity in the sample and rule out potential confounding factors affecting hospitals and health centers differently. As shown Table 2, there were 323 health workers interviewed from 186 rural health centers.

Table 2: Description of the sample

	Baseline		Follow up		Total
	RBF	Control	RBF	Control	
Health facilities	80 (59)	50 (34)	80 (59)	50 (34)	260 (186)
Health workers	146 (107)	96 (63)	149 (103)	92 (50)	483 (323)

Note: Figures in parentheses are for RHCs.

Job Satisfaction Estimation

34. Job satisfaction questions were designed based on two existing validated tools, namely Minnesota Satisfaction Questionnaire and the Job Satisfaction Survey 1996 mentioned earlier.[29-30] Health workers' responses to each satisfaction-related question were recorded on a five-point Likert scale. These responses were transformed into unidirectional measures with the highest level of satisfaction 5 and the lowest 1. As shown in Table 6 below, we estimated a mean score for each thematic satisfaction construct. To develop a construct, we normalized each variable (pertaining to an individual question in the survey) to a 100-point scale and grouped similar variables thematically to develop a construct by assigning equal weight to all variables under each theme. Themes were relationship among staff, working conditions, individual performance, compensation, recognition for staff and career development. (Detailed individual satisfaction questions and corresponding constructs are presented in Annex 2.) Overall satisfaction is also measured with a direct question asking health workers to rank their satisfaction level from lowest to highest, which was later normalized to a 100-point scale.

Worker Motivation Estimation

35. Questions on motivation were designed based on the Minnesota Satisfaction Questionnaire and the Job Satisfaction Survey 1996. As shown in Table 7 below, we derived a mean score for each thematic motivation construct; and an aggregated overall motivation score as a mean of all thematic constructs. To develop a construct, we followed exactly the same approach as in the preceding paragraph. (Annex 3 shows the detailed individual motivation questions in each construct.)

Model specification

36. Satisfaction or motivation outcome Y of individual worker i in facility j at time t is estimated using the following specification:

$$Y_{ijt} = \propto + \beta RBF_{jt} + \gamma T_t + \delta Facility_j + \theta X_{ijt} + \mu_{ijt} \qquad (1)$$

where α is a constant; *RBF* is a binary variable denoting whether the facility received RBF incentives at time *t*; *T* is a time period (=0 for baseline and =1 for follow up); *Facility* is the facility fixed effect; *X* represents a vector of individual worker characteristics, which may be correlated with the outcome such as age, age squared, gender, education, cadre, and frequency of supervision; and μ is the error term assumed to be independently and identically distributed. The coefficient of interest, β, represents the change in outcome among workers in RBF facilities between baseline

and follow up compared with the corresponding change in the control facilities, or the difference-in-differences estimate.

37. The model thus takes advantage of the balanced panel in the facilities to control for any unobserved facility characteristics that remained constant between the two periods and that may affect staff satisfaction or motivation independently of RBF. For example, if a facility had a very motivated leader, that could positively influence staff motivation, whether the facility received RBF incentives or not. The facility fixed-effect estimate controls for this. However, if this leader joined the facility in between the baseline and follow up, it will not be controlled for. The validity of our estimates relies on the assumption of facility-level parallel trends, which likely holds given the short time period between baseline and follow up and that there were no major interventions in Zimbabwe's rural health system during this period (besides RBF in the sampled districts).

QUALITATIVE ASSESSMENT

38. This report makes use of qualitative data from the PME conducted in October–November 2014 to validate the quantitative findings.[51] The PME intended to gain an in-depth knowledge of the program's implementation and the determinants of its performance. It purposively selected one low- and one high-performing facility in four districts (for eight facilities) with performance defined as the ratio of actual earnings from RBF incentives compared with potential maximum earnings based on catchment population size. For these eight facilities, 31 health workers were chosen for an in-depth interview. The PME focused on several topics, including quality of care, role of supportive supervision, and issues of HRH. Data were transcribed verbatim, coded, and analyzed manually through a content analysis. The major themes for analysis were factors affecting motivation, and satisfaction, of staff. More information on the design and data can be found in the PME standalone report.[54]

RESULTS

BACKGROUND CHARACTERISTICS OF HEALTH WORKERS

39. Table 3 provides descriptive statistics of health worker variables at baseline and follow up. Female health workers constituted the majority of the study sample: around 62 percent in the baseline but closer to 70 percent by follow up. The average health worker was aged about 37.5 years. The most common level of education was secondary, though at the baseline there was a significant difference in the level of education between RBF and control facilities. Primary care nurse was the major health worker cadre consisting of half of the sample, followed by state registered nurse and nurse midwife. Health workers reported having worked for a mean of 40 hours during the week preceding the survey. On average, health workers had received five supervision visits in the previous year.

Table 3: Descriptive statistics of health workers in the sample for RHCs

Variable	Baseline			Follow up		
Variable	**Control (Mean) N=63**	**RBF (Mean) N=107**	**p value**	**Control (Mean) N=50**	**RBF (Mean) N=103**	**p value**
Female	0.635	0.623	0.849	0.728	0.698	0.617
Age	37.653	38.455	0.528	38.663	38.188	0.697
Obtained secondary education	0.542	0.418	0.059	0.489	0.611	0.065
Obtained higher education	0.417	0.555	0.036	0.348	0.289	0.337
State registered nurse	0.208	0.199	0.855	0.228	0.242	0.814
Primary care nurse	0.438	0.507	0.293	0.478	0.550	0.278
Nurse midwife	0.156	0.082	0.074	0.217	0.121	0.046
Reported work hours last week	39.198	42.240	0.100	37.783	40.953	0.203
Frequency of supportive supervision received in the last year	5.226	5.815	0.534	5.189	5.592	0.469

40. Tables 4 and 5 show the descriptive statistics of satisfaction and motivation constructs respectively at baseline and follow up for the health workers in the sampled RHCs. Among the individual constructs for satisfaction at the baseline, satisfaction on recognition[2] was reported to be the highest followed by relationships and self-performance in both arms. Career development and working conditions were reportedly the lowest constructs. Health workers in the control facilities were reported to be significantly more satisfied on compensation and career development opportunities than in RBF at baseline. However, by follow up, satisfaction on working conditions was reported to be the highest, followed by recognition and self-performance. Health workers in the RBF facilities reported being highly satisfied on relations among staff (more than their counterparts in the control facilities).

[2] Both respect from the community and recognition of good work by the head of facility.

Table 4: Descriptive statistics of satisfaction constructs baseline and follow up for RHCs (score range: 1-100 points)

	Control baseline (N=63)	RBF baseline (N=107)	p-value	Control follow up (N=50)	RBF follow up (N=103)	p-value
Working conditions	67.882	68.436	0.784	81.196	80.101	0.418
Relations among staff	83.060	81.664	0.403	60.326	65.324	0.013
Self-performance	81.120	80.822	0.875	79.076	78.272	0.648
Compensation	60.221	56.207	0.040	59.402	62.047	0.139
Recognition	83.854	83.134	0.687	78.397	80.705	0.156
Career development	66.276	62.328	0.098	63.859	63.758	0.962
Overall satisfaction	73.917	72.234	0.206	70.272	71.527	0.277

41. Among motivation constructs at the baseline, self-concept (see Annexes 3 and 4) was reported to be the highest, followed by recognition and leadership. RBF arm reported significantly higher motivation on teamwork, work environment, self-concept, recognition and overall motivation score. At follow up, recognition followed by self-concept and leadership were reported to be the highest on the RBF arm. However, control facilities reported of significantly higher scores for teamwork, change, recognition, well-being, leadership and overall motivation.

Table 5: Descriptive statistics of motivation constructs, baseline and follow up for RHCs (score range: 1-100 points)

	Control baseline (N=63)	RBF baseline (N=107)	p-value	Control follow up (N=50)	RBF follow up (N=103)	p-value
Teamwork	84.226	86.869	0.055	87.236	83.950	0.022
Autonomy	87.396	90.068	0.183	90.761	88.456	0.254
Changes in facilities	74.514	77.123	0.134	76.449	73.020	0.038
Work environment	85.720	90.286	0.000	90.257	88.554	0.165
Self-concept	94.375	96.256	0.055	96.594	95.414	0.130
Recognition	92.083	96.096	0.011	97.717	96.107	0.093
Well-being	88.833	87.425	0.402	87.043	80.349	0.004
Leadership of facilities	91.319	94.064	0.119	95.072	90.694	0.011
Overall motivation score	87.163	89.789	0.005	89.994	87.083	0.002

ECONOMETRIC RESULTS: RBF PROGRAM'S EFFECTS ON HEALTH WORKERS' SATISFACTION AND MOTIVATION

42. This section presents the results from econometric estimation of RBF's impact on health workers' satisfaction and motivation. The estimation uses the specification in equation 1 and our

preferred method of deriving satisfaction and motivation constructs, which is obtaining an average among indicators under the same theme and normalizing the value to a 0-100 scale.

43. Table 6 presents the effect estimates for component satisfaction constructs and the overall job satisfaction score. Health workers in RBF facilities were more satisfied with their compensation than their counterparts in non-RBF facilities. The individual questions reveal that this is driven by the positive effects in employment benefits and living accommodation (Annex 5). The coefficients for all constructs including working conditions (a direct RBF input) are positive for RBF facilities. On overall job satisfaction, though not statistically significant, health workers in RBF facilities scored an average 3.26 points higher than workers in control facilities. In our findings, we did not find any significant association between the level of job satisfaction and that of motivation.

Table 6: Estimated RBF program effect on health worker job satisfaction, RHCs (N=316)

	Relationships with staff in facility and supervisors	Working conditions	Self-performance of staff	Compensation	Recognition	Career development	Overall job satisfaction
Impact estimate	-0.679	5.884	0.675	8.436**	-0.621	4.214	3.259
	(3.762)	(4.069)	(3.958)	(3.92)	(3.496)	(5.467)	(2.613)
Age	0.147	1.018	-0.227	0.384	0.744	-0.391	0.321
	(0.792)	(1.069)	(0.978)	(0.931)	(0.858)	(1.146)	(0.61)
Age squared	-0.001	-0.013	0.002	-0.006	-0.010	0.006	-0.004
	(0.009)	(0.013)	(0.012)	(0.011)	(0.01)	(0.013)	(0.007)
Male	-0.825	-1.096	0.669	-1.729	-0.635	0.016	-0.698
	(2.112)	(2.256)	(2.513)	(2.141)	(2.4)	(3.036)	(1.475)
Obtained more than secondary education	-2.267	-5.311**	2.481	-0.263	-1.460	1.947	-1.120
	(2.014)	(2.076)	(1.743)	(2.358)	(1.989)	(3.629)	(1.451)
Supervised four times during last year	-1.346	-0.093	0.255	0.160	-0.664	-3.065	-0.620
	(2.154)	(2.646)	(2.901)	(2.477)	(2.426)	(3.781)	(1.669)
Supervised more than four times during last year	-2.668	0.010	-2.170	-1.096	-1.294	-2.931	-1.430
	(2.39)	(2.497)	(2.840)	(2.722)	(2.888)	(3.312)	(1.799)
Primary care nurse	-2.622	-4.927*	1.528	-6.354**	-1.091	-6.585*	-3.732**
	(2.305)	(2.634)	(2.626)	(2.775)	(2.49)	(3.683)	(1.668)
Nurse midwife	1.306	1.032	8.052*	-0.482	-1.109	-2.990	0.635
	(3.305)	(3.463)	(4.528)	(7.361)	(4.037)	(6.451)	(3.465)
Other cadres	-5.100	1.874	4.812	0.047	2.052	-9.607**	-1.315
	(3.19)	(4.432)	(4.169)	(3.977)	(3.967)	(4.357)	(2.436)
Constant	84.023***	57.911***	84.681***	58.441***	72.037***	76.518***	71.970***
	(16.034)	(21.008)	(18.613)	(19.093)	(17.584)	(23.262)	(12.245)
R2	0.457	0.484	0.455	0.480	0.432	0.440	0.515

*Facility fixed effects adjusted for age, age squared, sex, education, work experience, cadre, and supervision; SEs clustered at facility level; sample includes RHCs only; * p<0.1, ** p<0.05, ***p<0.01*

44. Table 7 presents the effect estimates for health worker motivation. Health workers in RBF facilities reflected less motivation on all constructs. However, this negative pattern is statistically significant only for teamwork, recognition, and leadership of facility. An in-depth examination of individual questions (Annex 4) reveals that these negative results are driven by health workers' low motivation on a number of factors including "the way team performance happens in facility"; "team recognition"; and "leadership and innovative ability of the head of facility". When it comes to personal factors, health workers were also not motivated about their own "hardworking nature".

Table 7: Estimated RBF program effect on health worker motivation, RHCs (N=316)

	Teamwork	Autonomy	Changes in facilities	Work environment	Self-concept	Recognition	Well-being	Leadership of facility	Overall motivation
Impact estimate	-7.499**	-3.543	-2.430	-5.486*	-2.252	-6.241*	-5.917	-7.925**	-5.297**
	(3.091)	(4.248)	(3.846)	(2.815)	(2.251)	(3.719)	(4.048)	(3.915)	(2.258)
Age	-0.772	-1.286	-1.178	-0.106	-0.033	-0.365	-0.161	-0.650	-0.419
	(0.761)	(0.862)	(0.855)	(0.379)	(0.456)	(0.685)	(0.976)	(0.856)	(0.403)
Age squared	0.010	0.017	0.014	0.004	0.002	0.006	0.006	0.010	0.007
	(0.009)	(0.011)	(0.010)	(0.005)	(0.006)	(0.008)	(0.011)	(0.010)	(0.005)
Male	0.915	1.711	2.458	1.469	-1.457	1.215	-1.105	0.760	0.610
	(2.136)	(2.856)	(2.381)	(1.296)	(1.057)	(1.961)	(2.791)	(2.086)	(1.175)
Obtained more than secondary education	1.368	0.565	0.831	1.872	1.266	-0.407	0.558	-1.613	0.988
	(1.491)	(2.269)	(2.064)	(1.222)	(0.912)	(1.434)	(2.465)	(2.311)	(1.027)
Supervised four times during last year	1.838	-1.530	0.634	-1.157	0.310	1.611	1.507	-2.557	0.101
	(2.241)	(2.552)	(2.713)	(1.850)	(1.407)	(1.671)	(3.045)	(2.741)	(1.488)
Supervised more than four times during last year	-1.918	-3.134	2.682	-1.558	0.186	-1.254	3.599	-1.615	-0.437
	(2.454)	(3.115)	(2.878)	(1.695)	(1.550)	(1.937)	(2.930)	(2.702)	(1.469)
Primary care nurse	0.629	1.351	2.601	0.796	1.446	0.294	4.140	-2.630	1.173
	(2.307)	(4.156)	(2.910)	(1.738)	(1.555)	(2.060)	(4.042)	(2.923)	(1.468)
Nurse midwife	4.468**	10.040**	4.251	0.520	-1.445	2.935	-3.159	-0.490	1.276
	(2.095)	(4.545)	(5.100)	(3.000)	(1.432)	(1.954)	(5.463)	(3.509)	(1.873)
Other cadres	1.015	0.186	2.100	4.051	0.499	-6.085	8.733**	-0.736	2.324
	(2.808)	(5.231)	(3.766)	(2.600)	(2.986)	(4.415)	(4.386)	(3.616)	(2.181)
Constant	98.598***	111.154***	96.807***	85.768***	92.450***	99.454***	79.978***	105.949***	92.762***
	(15.282)	(16.529)	(16.211)	(7.916)	(9.097)	(13.875)	(19.656)	(17.885)	(8.123)
R2	0.479	0.358	0.416	0.450	0.491	0.450	0.423	0.468	0.477

*Facility fixed effects adjusted for age, age squared, sex, education, work experience, cadre, and supervision; SEs clustered at facility level; sample includes RHCs only; * p<0.1, ** p<0.05, ***p<0.01*

WHAT CAN EXPLAIN THE ECONOMETRIC RESULTS? REVISITING THE CAUSAL PATHWAYS

45. The above regressions drew a puzzling picture on health worker motivation given the documented positive effects of the program on coverage of key services and quality of care as shown in the overall impact evaluation report.[22] Theoretically, however, these results are possible (see Table 1). Although that table lists a number of aspects potentially affecting workers' satisfaction and motivation, what we can estimate econometrically is only the net effect. In search for a possible explanation of the econometric estimates, the following section revisits each factor in the causal pathway and explores further how it could have happened, using both quantitative IE results and qualitative data from the PME. Although it is not possible to test rigorously the causal effects of the each factor, this section is an attempt to find possible explanations of the baffling econometric results.

Financial incentives motivate and improve performance, but the relative increase in earnings may have been outweighed by heavy additional workload

46. The PME highlights that health workers were satisfied and motivated by the idea of additional financial incentives, as their base salary was low and facilities were running on a low budget. Receiving the bonus was an extrinsic impetus to perform better, attract more patients, and improve facilities' working conditions.

> It really enhances our performance especially at the maternity ward because we get incentives for every delivery so we don't mind even working overnight, it's really motivating. We perform well.
>
> RBF has given us money to make the clinic more attractive and that when patients come to the clinic they get treatment they are looking for. On top of it all I'm also getting an incentive as a health worker. So we are hoping that more people come to the clinic for treatment so that we get more money for me and the clinic. That would make me feel great.

47. However, there were also apprehensions about the amount of incentives commensurate with their increasing workload and volume of tasks required for each incentivized service.

> We work for extra hours and we do not get remuneration for over time. Workload and long working hours do affect our performance. We are really not comfortable with the accommodation shortage. Visiting our far away family affects our performance.

48. The RBF program reduced the unit prices of services of a few incentivized indicators in its expansion phase, reportedly reducing workers' overall extrinsic motivation. A few staff felt that the program might not be sustainable due to this reduction.

> If the prices were not reduced it could have been sustainable, but they are now so low; the incentives might end up so small as well. Sometimes RBF rewards are just too hard on us such that the points get low and so do the funds. Price change has affected staff motivation negatively.
>
> We were not told the specific reasons for the [bonus reduction], we just assumed that the donor could not afford to fund the program. The price changes did not affect our attitude toward work. Though calculation of money distribution is done at the district level, I think it is fair. If the scheme is not sustainable, health worker performance may gradually decline.

49. According to staff, the sharing of incentives among different cadres in a facility was unfair. RBF bonuses are divided among facility personnel using a formula that takes into account position, number of years worked in the facility, responsibility, and the number of off-hours worked. As shown in Annex 1, the formula gives higher weights to higher cadres such as nurse-in-charge or nurse, and in return expects higher responsibilities and tasks from them. Therefore, the difference between the amount of incentives received by a higher or lower cadre in a facility sometimes could be as much as 10 times. However, given the increased patient load, often an equal sharing of responsibilities commensurate with the amount of incentives for each cadre was difficult, vexing lower staff cadres. Higher cadres (e.g. head of facility), however, reported the sharing of incentives to be transparent and fair.

> There is tension in how the money is distributed but others think that the EHT [environment health technician] is not doing as much work as the others. Individual awards, however, are discouraging for others and they might create tensions among us. We are working as a team so it's not fair. Collective awards are better. Pricing was not explained very well to clinic staff. We do not understand the changes because we are now getting very little.

50. From these findings, which align with the HRH results (tables 6 and 7), we can conclude that health workers were satisfied with the concept of incentives complementing their salary, yet

the volume and sharing criteria of incentives and the increasing workload could have affected their overall motivation.

Issues related to supervision from the District Health Team

51. The PME reports the mixed opinion of health workers on the supportive supervision they received from the District Health Team, which could have influenced their motivation. A few felt that supervision could change their attitude toward patients and improve their accountability.

> I think supervision really helps they come and show us the do's and don'ts, it keeps us up to the mark. The assessments have also changed our attitudes toward proper treatment of patients.

52. However, a fair number remarked that supervision was irregular; it did not give them formal feedback; and it did not consider practical constraints that the facility is faced with when judging performance. Staff were also concerned about the technical capacity of supervisors. Quantitative results also reflect that the number of supervision visits from the district team had come down in the previous two months (-0.802; p=0.190).

> Since we are on the ground we know some of the things that might affect the program but when they come they just look at their supervision checklist. They don't review the minutes of our own meetings which will be highlighting some of the issues that would have made us fail some of our intended activities. They just review their books and yet do not consider some of the challenges we would have highlighted in our minutes. They also do not give us formal feedback of their findings.

> Even the superiors should keep having trainings on what really to look for because sometimes we feel their just too hard and overlook the main objective for their supervision. The process is too rigid, it's not flexible.

Evidence of improved working and living conditions for staff

53. Our econometric analysis did not show any statistically significant positive result for workers' satisfaction on working conditions. The findings from the PME, however, indicated that staff were satisfied on the improvement that the RBF project had brought on working conditions at facilities. Specifically, RBF was felt to improve the structural quality of facilities, which is crucial to motivate staff to perform optimally. In the PME, health workers felt that with RBF money they could buy essential drugs, equipment and other accessories to make the facility more functional.

> Now we hardly have drug stockouts. We are using RBF funds to buy some chronic disease medication like that for epilepsy. The fact that we can supply and buy drugs makes us happy to work here and makes us feel that we are doing a good job….RBF has really helped quality because the funds really help us to get what we require for patients to get proper treatment in every area; even if our equipment needs replacement (e.g. BP machine), we can now easily replace it.

54. In line with this observation, quantitative evidence from the IE Report indicates an improvement in the availability of drugs: e.g. availability of iron tablets increased by 16 percentage

points (0.157; p<0.1), folic acid by 21 percentage points (0.211; p<0.1) and urine dipsticks by 42 percentage points (0.422; p<0.05). RBF facilities showed a 0.96 standard deviation (0.968; p<0.05) higher than non RBF facilities for standardized general drug index (IE Report). Availability of electric autoclave and refrigerator was improved in RBF facilities by 29 percentage points (0.292; p<0.05) and 27 percentage points (0.269; p<0.05) respectively (IE Report). RBF facilities showed higher standard deviations of 0.84 (0.837; p<0.05) on the overall structural quality index for family and child health services.

55. According to the quantitative results, having living accommodation for family was a motivating factor for workers in RBF facilities (13.965; p<0.05). However, as per the PME, not all staff had satisfactory living arrangements. Visiting families living far away was reported to have affected their performance.

> We use RBF funds for transporting drugs and also sending our staff by public transport to go and get drugs from the district and even gas for the refrigerator. However, as we do not have family accommodation, we spend lots of time in visiting out families, which affects our performance.

Influence of autonomy, teamwork, and facility leadership

56. PME findings reflected staff satisfaction over improved facility autonomy under RBF. IE Report findings also showed that there was an improvement in such autonomy in routine functioning, especially for the head of facility. A single-difference analysis from the IE follow-up survey data indicated that under RBF, the heads of facility had improved their autonomy in allocating facility budget (0.503; p<0.05) and spending on building maintenance (1.176; p<0.05). The same data showed an overall improvement in the autonomy index in RBF facilities (0.546; p<0.05). (The autonomy index explored the head of facility's autonomy on allocation of budget and staff responsibilities, spending of funds and procurement of supplies.)

> Yes, RBF helps autonomy because we have meetings to discuss what we want to do and how we plan to upgrade quality, although usually what slows our progress is the issue of funds. RBF now helps us to see what we need and make purchasing decisions. The fact that we are now able to make small decisions has motivated the staff and we are confident that we are managing the clinic on our own.

57. During the PME, several staff reported that they were satisfied with improved facility autonomy and teamwork, especially for addressing the increased workload under RBF. However, the findings are not nuanced enough to show the power dynamics among different cadres of staff within a facility and their effect on staff motivation. There is no evidence revealing how the head of facility manages lower cadres of staff and motivates them. The IE survey reported that staff motivation was negatively affected by the head of facility's limited leadership and innovative skills (-10.982; p<0.05). We did not get any qualitative evidence to substantiate this evidence. However, the sense of improved teamwork was strongly reflected.

> We help each other out as a team. When one of us is facing some challenges, we try and solve the problem by ourselves and then we talk to the nurse in charge. To cope with the workload we are now working as a team… We are also self-motivated. We communicate and share ideas and consult each other on areas where the other lacks knowledge. By teamwork we mean that we share tasks.

Evidence of increased patient workload and longer working hours leading to burn-out

58. A facility fixed-effect analysis showed an increase in staff work hours during the week preceding the survey for antenatal care (1.664 hours; SE 6.151) and care for children under-5 (20.169 hours; SE 12.049; $p<0.1$) in RBF facilities. The PME confirms that, due to increased patient load, health workers' workload has increased in RBF facilities, especially to meet increased demand for MCH services. However, as reported by the PME, given the shortage of staff in RBF facilities, this increased workload stretched the capacity and time of the workers to such an extent that several of them felt burned out.

> The workload and shortage of staff affect our functioning. Any new workshop brings new registers and more work. Besides the teamwork, we cope by not taking tea breaks and doing overtime.
>
> We have a shortage of staff. We work extra hours and we do not get remuneration for overtime. It's a heavy workload and long working day.

Validation of causal pathway: RBF's effect on health worker satisfaction and motivation

59. This section thus reveals significant positive experience with RBF from the qualitative assessment, but at the same provides insight that explains why a number of aspects on the causal pathway from RBF to satisfaction and motivation did not work out as desired. Specifically, though health workers viewed incentives as very important, they were not satisfied with the amount received relative to the additional tasks induced by RBF, nor the way incentives were allocated among staff; sometimes supportive supervision was not perceived as really "supportive"; and staff burnout due to increase patient load was apparent.

DISCUSSION

60. This study assessed the impact of Zimbabwe's RBF program on health workers' satisfaction and motivation. Beyond that, the study attempted to understand different factors in the possible causal pathway that could have affected these observed outcomes.

SUMMARY OF FINDINGS

61. Among the health workers interviewed from 186 RHCs, we observed that those in RBF facilities have a better improvement on job satisfaction. In particular, RBF facilities had more health workers satisfied with their compensation. The overall satisfaction score of health workers was also positive for RBF facilities. Conversely, motivation indicators were not positive for RBF facilities; in particular, health workers were less motivated in teamwork, recognition, and leadership ability of the head of facility.

62. On the causal mechanisms, we found that the design features of the RBF programs and their interaction with the contextual factors (institutional and individual) derived these particular trends on satisfaction and motivation. Specifically, staff expressed their dissatisfaction on reduced unit prices of services; the relative proportion of incentive to their tasks and that of their peers; not having adequate living accommodation; limited capacity of supervisors; and limited leadership

ability of the head of facility. Increased patient load contributing to a higher workload and consequent burn out was a major concern for health workers. This finding was confirmed by the quantitative finding, which reflected augmented work hours for MCH services among staff. Still, workers were positively motivated by improvements in working conditions, teamwork, and facility autonomy.

LIMITATIONS OF THE STUDY

63. This was one of the few studies that empirically tested the effects of an RBF program on HRH outcomes and assessed in-depth the potential causal mechanisms of impact, especially in a resource-constrained setting. Baseline and follow-up quantitative surveys were managed by two independent local firms and the research team did not have the direct control over the quality of the baseline survey. We found data on some relevant satisfaction and motivation themes from both surveys incompatible for analysis. This led to the omission of several crucial themes such as 'self-concepts on provider capacity and commitment' from the analysis. For the same reason we did not get suitable data to explore intrinsic motivation comprehensively. And as the PME was not conducted specifically for HRH analysis, we could not get nuanced qualitative data to triangulate our quantitative findings.

64. Due partly to the quality of the survey data and to the time constraints of this evaluation we could not analyze data on the capacity (e.g. knowledge) and performance (e.g. process quality of care) of health workers, which could have been the true empirical reflectors of their improved satisfaction and motivation. However, the satisfaction and motivation questions were adapted from the most well validated tools (Job Satisfaction Survey 1996 and Minnesota Satisfaction Questionnaire). Although study findings may not be generalizable to other country contexts, they potentially reveal limitations in the program design.

POLICY IMPLICATIONS AS GROUNDING FOR POTENTIAL ACTION POINTS

65. The findings on HRH outcomes and their contextual factors bring us to the following recommended action points which could potentially improve health worker satisfaction and motivation in the long run in Zimbabwe RBF program.

1. It is essential to have more comprehensive evidence on health worker motivation and improved capacities to perform.
2. The RBF program needs to consider the sustainability of worker motivation for their sustained, improved performance.
3. District health executives should be trained in supportive supervision skills so they can motivate health staff, and ensure team sharing and transparency in facility functioning. The role of the district health executive can be realigned to provide routine support to the head of facility in planning and management of staff and the facility.
4. The formula for allocating the staff bonus needs to be revisited to assure fairness in allocation. It may be difficult to draw a magic number that is really satisfactory to a health worker. However, incentive and pricing of indicators should provide a sustained and predictable source of income and should be rationally proportionate to the tasks and volume of work that workers deliver.

5. Communication within facilities could be improved to make sure staff are clear about the allocation mechanism. A healthy team atmosphere is needed.
6. There need to be attempts to see how HRH outcomes in RBF programs are not affected by larger health system issues such as limited supply of skilled HRH and living accommodation for health workers.
7. Financial sustainability of the program, along with an improved macro health system framework (more skilled human resources, improved capacity at lower levels of the health system) are needed for sustained satisfaction and motivation among health workers.

66. Although specific to Zimbabwe, many of these recommendations can be applied to similar RBF programs elsewhere as well.

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ANNEXES

ANNEX 1. FORMULA AND PARAMETERS USED FOR ALLOCATING RBF BONUSES AMONG STAFF IN ZIMBABWE

Classification of RHC staff

A	Position	Basic Index, % points
1	Nurse in charge	100%
2	Nurse	90%
3	EHT	90%
4	Nurse aide	50%
5	General Hand	40%
6	Primary Counsellor	30%

B	Number of years worked	% points
1	1 to 5 years	1%
2	6-10 years	2%
3	11+ years	3%

C	Responsibility	Not more than 25%
1	Nurse in charge	25%
2	Nurse	20%
3	EHT	15%
4	Nurse Aide	12%
5	General Hand	8%
6	Primary Counsellor	5%

D	Extra or less hours worked	% points	Max % points	Comments
1	Extra hours nighttime	0.30%	25.20%	Fixed at 12 hrs X 7 dys x 0.3 (nurses only)

E	Quarterly health facility DHE supervision	
	Evaluation	% points
1	DHE supervision score between 0% and 100%	DHE score X 0,35

Calculation of RHC Performance Based Incentives

Health facility name	Example Clinic
Date:	18-Aug-15
RBF subsidies earned during quarter:	$5,000.00
25% available for incentives:	$1,250.00
DHE Quality supervision score	56%

Staff incentives for	Quarter ☑ Month ☐	Start Month	End Month	Year
		January	March	2013

Calculation of payments based on total RBF income and performance index

	Surname & First name	Position (select from drop down list)	1. Base index	2. number of years worked (select from drop down list)	3. Responsibility	4. Less days not worked	5. Days worked (% points)	6. Extra hours worked (Max = 12hrs x 7 Days) (For Nurses only)	6. Extra hours worked (% points)	7. Quality supervision	% Total incentive	Incentive total
1	Maggie	Nurse in charge	0%	3.0%	0%	66	0%		0.0%	20%	23%	$ 19.27
2	Carol	Nurse in charge	100%	3.0%	25%		100%		0.0%	20%	248%	$ 211.15
3	Enias	Nurse	90%	1.0%	20%		100%		0.0%	20%	231%	$ 196.65
4	Eddie	EHT	90%	1.0%	15%		100%			20%	226%	$ 192.39
5	Rose	Nurse aide	50%	1.0%	12%		100%			20%	183%	$ 155.72
6	Aquie	General Hand	40%	2.0%	8%		100%			20%	170%	$ 144.63
7	Pattie	Primary Counsellor	30%	3.0%	5%		100%			20%	158%	$ 134.40
8		Nurse	90%		20%		100%		0.0%	20%	230%	$ 195.80
9												
10												

										Total percentage for staff for this quarter:		1466%	$ 1,250.00
NB: Fill in names of health staff and the required information in the green cells only													
	Compiled by:				Authorised by:								
	Name:				Name:								
	Designation:				Designation:								
	Signature:				Signature:								
	Date:				Date:								

ANNEX 2. DETAILED QUESTIONS INCLUDED IN THE JOB SATISFACTION CONSTRUCTS

Job Satisfaction	
Theme	**Individual Question**
Relationships with staff in facility and supervisors	
	Working relationships with other facility staff
	Working relationship with district health executive/provincial health executive
	Working relationships with Provincial MoHCW staff
	Management of the health facility by MOHCW or mission/NGO
	Relationships with local traditional leaders
Working conditions	Availability of medicine in the health facility
	Availability of equipment and supplies in the health facility
	The physical condition of the health facility building
Self-performance of staff	Your ability to provide high quality of care
	Your ability to meet the needs of the community
Compensation	Your salary
	Employment benefits (travel allowance, bonus, etc)
	Safety and security to live and practice in the community
	Living accommodations for your family
Recognition	Your respect in the community
	Your boss' recognition of your good work
Career development	Your opportunities for promotion
	Your training opportunities to upgrade your skills and knowledge
Overall satisfaction score	Overall, your satisfaction with your job

ANNEX 3. DETAILED QUESTIONS INCLUDED IN THE WORKER MOTIVATION CONSTRUCTS

Worker Motivation	
Theme	**Individual Question**
Teamwork	Staff willingly share their expertise with other members
	When disagreements occur among staff, they try to act like peacemakers to resolve the situation themselves
	Staff willingly give their time to help each other out when someone falls behind or has difficulties with work
	Staff talk to each other before taking an action that might affect them
	Staff take steps to prevent problems arising between them
	*Staff spend their time chatting amongst themselves about things that are not related to work
	*Staff spend time complaining about work-related issues
Autonomy	My job allows me freedom in how I organize my work and the methods and approaches to use
	I am given enough authority by my supervisors to do my job well
Recognition	It is important for me that the community recognizes my work as a professional
	It is important for me that my peers recognize my work as a professional
Change in facility	Changes in the facility are easy to adjust to
	*Rapid changes are difficult to cope with
	Changes bring opportunities to make improvements in the facility
Work environment	My job makes me feel good about myself
	I am proud of the work I'm doing in this facility
	I am proud to be working for this health facility
	I am glad that I am working for this facility rather than in other facilities in the country
	*I would prefer to work somewhere else than in this facility
	This health facility inspires me to do my very best on the job
	My facility is a very personal place. It is like an extended family and people share a lot with each other
	My facility is very dynamic and an innovative place. People are willing to take risks to do a job well-done
	My facility is very formal and structured. Policies and procedures are important for doing our work
	In my facility, we focus on achieving daily goals getting our work done. Relationships between staff are less important
	Innovation and being first to try something new are important in my facility
	Following procedures and rules is very important in my facility
	Achieving results and high performance is very important in my facility.
Self-concept	I complete my tasks efficiently and effectively
	I am a hard worker
	I am punctual about coming to work

Leadership	The head of my facility is a mentor and a role model
	The head of my facility is willing to innovate and take risks in order to improve things
	The head of my facility motivates staff to achieve goals
Well-being	These days, I feel motivated to work as hard as I can
	In the past two weeks, I have felt cheerful and in good spirits…..
	In the past 2 weeks, I have felt calm and relaxed…
	In the past 2 weeks, I have felt active and vigorous…
	In the past 2 weeks, I woke up feeling fresh and rested…
	In the past two weeks, my daily life has been filled with things that interest me….

**denotes those questions with answers reverse coded. This reverse coding was meant to avoid the ambiguity in the structure of questions and the possibility of getting an incorrect answer.*

ANNEX 4. ECONOMETRIC ESTIMATION RESULTS FOR INDIVIDUAL WORKER MOTIVATION QUESTIONS

Variable	Impact estimate	SE
Teamwork		
Staff willingly share their expertise with other members	-6.420	4.832
When disagreements occur among staff, they try to act like peacemakers to resolve the situation themselves	-5.778	8.216
Staff willingly give their time to help each other out when someone falls behind or has difficulties with work	-6.091	3.716
Staff talk to each other before taking an action that might affect them	-10.465**	4.571
Staff take steps to prevent problems arising between them	-7.342	5.158
Staff spend their time chatting amongst themselves about things that are not related to work	-6.584	5.870
Staff spend time complaining about work-related issues	-9.811	6.571
Autonomy		
My job allows me freedom in how I organize my work and the methods and approaches to use	-3.395	5.982
I am given enough authority by my supervisors to do my job well	-3.691	4.287
Recognition		
It is important for me that the community recognizes my work as a professional	-5.089	4.142
It is important for me that my peers recognize my work as a professional	-7.394**	3.706
Changes in facility		
Changes in the facility are easy to adjust to	-3.687	6.647
Rapid changes are difficult to cope with	1.373	7.792
Changes bring opportunities to make improvements in the facility	-4.976	5.175
Self-concept		
My job makes me feel good about myself.	-3.048	3.141
I am proud of the work I'm doing in this facility.	-2.046	2.863
I complete my tasks efficiently and effectively.	-0.720	5.163
I am a hard worker.	-10.328*	5.596
I am punctual about coming to work.	1.814	8.711
These days, I feel motivated to work as hard as I can.	-0.856	5.438
Work environment		
I am proud to be working for this health facility.	-0.297	3.335
I am glad that I am working for this facility rather than in other facilities in the country.	-3.624*	1.932
I would prefer to work somewhere else than in this facility.	-2.811	2.804
This health facility inspires me to do my very best on the job.	-1.688	4.007
My facility is a very personal place. It is like an extended family and people share a lot with each other.	-4.411	5.113

My facility is very dynamic and an innovative place. People are willing to take risks to do a job well-done.	-9.087**	4.235
My facility is very formal and structured. Policies and procedures are important for doing our work.	-3.789	3.894
In my facility, we focus on achieving daily goals getting our work done. Relationships between staff are less important.	-18.382**	7.486
Innovation and being first to try something new are important in my facility.	-6.419	4.942
Following procedures and rules is very important in my facility.	-3.274	3.138
Achieving results and high performance is very important in my facility.	-4.896*	2.626
Leadership		
The head of my facility is a mentor and a role model.	-6.081	4.715
The head of my facility is willing to innovate and take risks in order to improve things.	-10.982**	4.323
The head of my facility motivates staff to achieve goals	-6.711	4.416
Well-being		
In the past two weeks, I have felt cheerful and in good spirits…..	-8.718*	5.001
In the past 2 weeks, I have felt calm and relaxed…	-15.715**	7.158
In the past 2 weeks, I have felt active and vigorous…	-2.083	5.615
In the past 2 weeks, I woke up feeling fresh and rested…	-3.245	6.178
In the past two weeks, my daily life has been filled with things that interest me….	0.176	7.279

*Facility fixed effects adjusted for age, age squared, sex, education, work experience, cadre, and supervision; SEs clustered at facility level; sample includes RHCs only; * p<0.1, ** p<0.05*

ANNEX 5. ECONOMETRIC ESTIMATION RESULTS FOR INDIVIDUAL 'SATISFACTION' QUESTIONS

Variable	Impact estimate	SE
Relationships with staff in facility and supervisors		
Working relationships with other facility staff	-4.595	5.242
Working relationship with district health executive/provincial health executive	-0.879	5.122
Working relationships with Provincial MoHCW staff	2.432	4.527
Management of the health facility by MOHCW or mission/NGO	-0.877	6.087
Relationships with local traditional leaders	0.651	5.341
Working conditions		
Availability of medicine in the health facility	2.991	5.378
Availability of equipment and supplies in the health facility	6.231	5.122
The physical condition of the health facility building	8.430	5.638
Self-performance of staff		
Your ability to provide high quality of care	2.655	4.291
Your ability to meet the needs of the community	-1.510	4.798
Compensation		
Your salary	7.415	6.693
Employment benefits (travel allowance, bonus, etc)	9.306*	5.323
Safety and security to live and practice in the community	8.949	7.161
Living accommodations for your family	13.965**	6.603
Recognition		
Your respect in the community	2.567	4.030
Your boss' recognition of your good work	-3.721	4.416
Career development		
Your opportunities for promotion	-0.400	6.585
Your training opportunities to upgrade your skills and knowledge	6.717	6.392
Overall satisfaction		
Overall, your satisfaction with your job	3.913	4.457

*Facility fixed effects adjusted for age, age squared, sex, education, work experience, cadre, and supervision; SEs clustered at facility level; sample includes RHCs only; * p<0.1, ** p<0.05*