

NOVA SCHOOL OF BUSINESS AND ECONOMICS

Community Health Care Workers in Guinea-Bissau: who is performing better?

Socio-demographic characteristics, motivation and ethnicity analysis

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Abstract

In the Community Health Workers settings in Guinea-Bissau, we explore several determinants of performance. Firstly, we investigate the effect of socio-demographic characteristics like education, gender, wealth, job status and community "embedddness". We provide evidence for significant differences due to education, gender or job status and community interaction. We also research on the relation between motivation and performance, concluding extrinsically motivated agents perform better, as opposed to agents with stronger antisocial impact perceptions, who perform worse.

Given the richness of our data, we also explore differences in ethnicity in terms of performance outcomes or motivation orientations, but in both cases we find few significant results.

CONTENTS

1. Introduction	2
1.1. Background	3
2. Literature review	4
3. Description	6
3.1. Data	6
3.2. Descriptive Analysis	6
3.2.1. Descriptive Statistics	6
3.2.1.1. Gender	7
3.2.1.2. Wealth Index	7
3.2.2. Ethnicities' Origins	7
4. Methodology	9
4.1. Empirical Estimation Method	9
4.1.1. Outcomes Variables Description	9
4.1.2. Motivation Variables Description	11
5. Results	12
5.1. What drives Performance?	12
5.1.1. Socio-demographic characteristics	12
5.1.1.1. Gender and Unemployment: Odd-ratios for Performance	13
5.1.2. Social Relations and Community Activities	14
5.1.3. Motivation	14
5.1.4. Ethnicity	15
5.1.5. Heterogeneous effects	15
5.2. What drives Motivation?	16
6. Discussion and Policy recommendation	20
7. Conclusion	22
A. Appendix	27
A.1. Tables	27
A.2. Figures	29
A.3. Regressions	30

LIST OF FIGURES

A.1. Average Achieved Tertiary, Secondary Education by age; Average Unemployment and job positions by age	29
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LIST OF TABLES

3.1. CHW Descriptive statistics	8
4.1. Outcome Variables Synthesis	11
5.1. Female and Unemployed Community Health Workers Odd-Ratios	14
5.2. Interaction Model table	16
5.3. Motivation Determinants	18
5.4. Motivation Determinants	19
A.1. Gender Differences Descriptive Statistics	27
A.2. Ethnicities Statistics	28
A.3. Ethnicities Outcome Variables	29
A.4. Socio-demographics OLS Model	30
A.5. Social Relations OLS Model	31
A.6. Motivation OLS Model	31
A.7. Ethnicity OLS Model	32
A.8. Socio-demographics, Social Relations Probit Model	33
A.9. Motivation, Ethnicity Probit Model	34

1. INTRODUCTION

Community health care workers programs start to be widespread in 1980s' in many developing countries, as a powerful tool to address difficulties in access to the health care. Historically, those programs are not a "panacea" in solving serious deficiencies of the health system, nor particularly cheap to implement [33]. Agents are usually active members of their community, in many cases selected by the community and integrated into the Health Sector. They often have poor levels of education attainment even if their work scope is quite large, causing multi-tasking problems: if they provide monthly visits in which they disseminate health knowledge (pathologies symptoms and therapy, babies and child care, nutrition, family planning) as a standard service, they usually have context-specific additional tasks to implement. Their role is particularly important because of their closeness to the demand side of the market, even if services they provide rarely have substantial health impact and sometimes lack in terms of quality. The Development Economics literature has focused on studying Community health care programs with the clear intent to design incentives schemes that fostered self-sustainability and long term effectiveness, measuring their impact on job performance. Another stream of literature analyzed the relation between job outcomes and agent-specific aspects like motivation or socio-demographic characteristics.

In this study, we want to conduct an empirical research on which factor is the crucial determinant of performance in the Guinea-Bissau Community Health Care context, looking at socio-demographic features and motivation orientations, but also expanding on sociocultural factors such as the ethnic group. We propose to empirically test motivation theories that have found scarce empirical confirmation and application in developing countries settings. In addition, given the unique social and cultural environment in Guinea-Bissau, in which exist among 27 and 40 ethnicities (25 in our dataset) with specific geographic and historical origins, we research on ethnic groups differences. Another clear intent is to provide a first evaluation of the Community Health Care program in SAB (Autonomous Sector of Bissau), 12 months after the beginning of the program, combining data from NOVAFRICA baseline survey for the project "Impact Evaluation of Different Incentive Systems for Community Health Agents in Guinea-Bissau" with administrative data on Agents' performance, specifically researching:

- 1) What are the community health care workers' socio-demographic and economic features that correlate with performance;
- 2) How motivation can explain performance in our settings;
- 3) How motivation differs across agents and sub-populations;
- 4) Whether if ethnicities are so different in terms of motivation or performance.

Using simple OLS and probit models with performance as dependent variable, we find age, sex, employment status, motivation and community involvement are potential determinants. However,

we conclude motivation also differs by socio-demographic or cultural characteristics.

1.1. BACKGROUND

The Health sector in Guinea-Bissau was facing problems of access to health facilities and shortage of workforce, when the MINSAP (National Health Ministry) decided to introduce 1042 agents on Bissau territory¹. The implementation of the program was assigned to NGO VIDA, the organization that already implemented a similar project in more peripheral regions of the country, Cacheu and Biombo, since 2012. The program rose with the clear intent to decrease infant mortality, which has a dramatic incidence on Guinea-Bissau's population, but also helping pregnant women during childbearing, birth and the first years of their offspring' life. A report by INE (The National Institute of Statistics) and UNICEF in 2014 [35] found out live-born children had 36 percent probability of dying during their first month, 55 percent until the first 12 months or 89 percent of not reaching their fifth year of life. Despite this statistic, children mortality rate has been improving in the last years. Other widespread problems in Guinea-Bissau context are insufficient nutrition, lack of access to improved water or early childbearing [35]. Instead, pneumonia, diarrhoea and malaria are the pathologies that mostly affect the population.

In our context, agents have been recruited with a minimum requirement of education, and receive periodical training on safe health practices and health education, together with frequent support and supervision by VIDA Supervisors. Agents are given the practical task to learn and then teach 16 Essential Family Practices (now reduced to 15), which involve basic hygiene behaviors that do not require significant costs but can strongly change health conditions of the population. Assigning to each agent about 50 families in the neighbourhood, the program had the very ambitious objective to cover 54,000 family nucleus, with an estimate of 385,000 beneficiaries.

The program opened for volunteers, who received a small financial incentive to cover basic expenses (about 6,000 FCFA, less than 10 euros per month), thus posing the challenge to find tools to monitor workers' performance, but also adequate policies to boost their motivation and avoid massive drop-out rates. Monitoring duties were assigned to 24 *Supervisores Operacionais de Terreno* (SOT), in charge of connecting health agents and the implementing organization.

The paper is structured as follows: the second section contains a literature review on motivation and community health care workers (CHW), the third contains descriptive statistics of the baseline survey. The fourth section describes the methodology of our research. The fifth presents main results, the sixth explore determinants of motivation. The sixth part discusses findings and give policy recommendations and section seven concludes.

¹Only 1012 Community Health Care Agents are included in this study.

2. LITERATURE REVIEW

It is relevant to study Community Health Care Workers characteristics, behavior and motivation in order to better design any CHW programs. We are interested to study how those aspects might affect performance. As Grant [18] suggested, performance might depend on a series of factors, among which we can identify motivation, opportunity or ability. Motivation might weakly determine performance, in contexts in which the last two variables have a large scope.

In the Community Health Workers literature, scholars conclude performance might have different drivers. Glenton [16] claims programs should try to understand CHWs expectations and motives, attempting to match those with context-specific incentives. A recent literature which takes from psychology studies the orientations of motivation and the effects of incentives schemes. Firstly, pioneer studies distinguish between intrinsic motivation, defined as the propensity to act due to the challenge incorporated in a certain activity, as opposed to extrinsic motivation, which is defined as maintaining a certain behaviour because of the external outcomes that comes as a consequence of the action: a reward or external pressure. Other scholars have identified pro-social motivation, meaning the desire to benefit other people, as another strong motivation factor, different from intrinsic motivation ([24], [34] [40], [47]). Incentives for the provision of such public goods appear crucial: Ashraf [2] concludes in Zambia context non-financial rewards leverage on agents' pro-social motivation, rather Besley [3] adds to the discussion non-selfish motivation and financial incentives are often substitutes, implying a limited scope for monetary incentives. Bhattacharyya [4] shows how payments are usually not sustainable, difficult to increment, create inequity, hence concluding "in-kind payments" are more desirable policies. Kok [28] partially disagrees, arguing in certain contexts lack of financial incentives for CHWs might be problematic in terms of performance, and, especially in poor zones, raise ethical issues, preventing people the access to health care.

Besides personal motives, Cambell et al. [7] suggest the importance of specific external processes: selection, supervision, training, incentive structures and "community embeddedness" [7] can drastically affect performance. In Kambarami's [26] study, positive feedback from supervisors and the community were associated with improved performance. Haines et al., [22] also suggest the importance of selection criteria for performance.

Contrarily to the literature on motivation, it is not equally developed research that relates motivation or performance to distinctive characteristics of the workers, such as socio-economic and demographic specificities. If we look at the work done by Greenspan [21], aggregate socio-economic factors can be classified in four categories: individual, family, community, and organizational factors. Motivation factors can be the social environment [39], the economy, environment, and health system policy [29]. A recent

paper by Murayama [36] argues cultural identity and ethnicity might influence performance, through the interaction between program provider and recipient.

Narrowing in the literature on socio-economic characteristics ([45], [28], [26], [27], [32] [6]), we acknowledge scholars recommend to research the relationship between motivation and characteristics like experience, education, language, gender, age, and marital status [27] [26]. Kambarami [26] includes financial incentives and job tenure, meanwhile other scholars identify visual means like bags and T-Shirts [22], better sanitation practices or longer work experience [26], [27]. Also wealth can be a performance determinant [30] [1]: in Bangladesh setting wealthier people showed increased drop-out rates [1].

On top of that, other empirical works [27] conclude older CHWs significantly show better performance levels or decreased drop-out rates [9]. Olang'o [38] reports older CHWs could get help from their sons in home duties. The author [4] expands that some cultures give greater importance on personal characteristics such as age, rather than achievements like training or education levels, thus older CHWs may be more respected by the community. Lehmann et al. [33] argue many CHW programs described in the literature require a certain education level as application pre-requisite. In some cases, more education corresponds to improved performance [27]. However, CHWs with higher educational qualifications may have better opportunities for alternative employment [6], leaving the program. In Bangladesh setting [1], those who are more educated are found more likely to drop-out. In Kenyan context [38], alternative job duties contributed to CHW drop-out, because of reduced spare time. On the other hand, gender can influence performance: in Kambarami [26] paper, female CHWs make more pregnancy referrals, compared to male CHWs. The author argues women are more likely to disclose a sensitive topic to the same sex. In Kenya, females CHWs, compared to men, are more likely to convince their clients to adopt maternal care practice [9]). However, either only women CHW programs or tasks differentiation by gender may reinforce conservative gender norms, rather than promoting gender equity [14]. For Feldhaus [14] and Steege [42], current policy design methods in health sector are implicitly tailored to male norms. Especially husband resistance may be a barrier to women participation [6].

By contrast, in other works [17], [37],[14],[32],[25] socio-economic characteristics are found to be non-significant determinants of performance. It seems very reliable the conclusion by Kambarami [26], who suggests there is no consensus in the literature regarding associations between age, civil status, sex and CHW performance, probably because of the specificity of the task or the social context.

Finally, this study helps to understand better which are the socio-demographic features that explain performance in Guinea-Bissau CHW program, also testing for the effect of sociocultural features like ethnicity. In addition, the paper shows how workers' extrinsic motivation correspond to improved performance whether negative social impact perception² negatively correlate with performance.

²For a detailed explanation of this variable see section 4.1.2

3. DESCRIPTION

3.1. DATA

The data we use for our study was collected by 24 NOVAFRICA enumerators and 4 supervisors in 2017 during the baseline survey of the project “Impact Evaluation of Different Incentive Systems for Community Health Agents in Guinea-Bissau”, implemented by NOVAFRICA Knowledge Centre in partnership with ONG VIDA. The survey was designed for an impact evaluation of CHWs, gathering data at the household and individual level (Socio-demographic characteristics, consumption, transfers, occupation, health, social relations, intrinsic motivation, volunteering experience). Besides that, we have included administrative data collected by VIDA to measure agents’ performance. Data has been cleaned in Stata 15 version.

3.2. DESCRIPTIVE ANALYSIS

In the next subsection we analyze CHWs’ descriptive statistics in terms of job status, education, socio-demographics and community participation. In the other subsection, we will provide some background information on ethnic groups. As said before, we expand on 6 ethnicities only (Balanta, Papéis, Majancos, Mandinga, Fula, Mancanha), which are the most represented in our sample, aggregating all the remaining ones into one category (“Others”) and taking “Balanta” ethnicity as reference group (see tables A.2 A.3). In the “Others” group, we include an aggregated sample of 168 agents, identified by ethnicities which count less than 30 agent each, for a total of 18 ethnicities.

3.2.1. DESCRIPTIVE STATISTICS

In our sample, the average CHW has 26 years (see Table 3.1), while the average household is composed of 10 members. If we discuss about reported income and expenditures, workers earn on average 96,000 FCFA, whereas they report to spend on average 21,451 FCFA (32 Euro) per capita on a monthly basis. In total, 75 percent of the CHWs have completed secondary education and the average education attainment is the 12th grade, the last year of Secondary School. For what concerns Tertiary education, only 8 percent of the sample has completed more advanced studies. Currently, half of the sample is still enrolled in education programs. In total, workers’ mothers have average inferior levels of education (4 and a half years) compared to their sons, similarly to agents’ fathers (8 years). During their life, agents have, on average, covered one job position, with only 5 percent of them having worked abroad. Agents on average start working at 21 years and a half, while they finish their studies after their 23rd birthday. One of the most important figures for our analysis is the 43 percent unemployment rate, which refers to the last 12 months before starting the CHWs program. When we look at the distribution of workers per sector,

we see 32 percent of the sample is employed in the small retailing sector, 17 percent owns a shop and 15 percent is in the agricultural sector. Additionally, in the last year before the CHWs program, people participated to two and a half social events within the community and on average covered 1.8 leadership roles. Overall, 86% of the agents participated to some kind of community activity, 80% have participated in volunteering activities different from the CHW program and 32% covered some leadership roles. Some of those positions includes: elected leader (22%), non-elected leader (8%) or religious leader (10.5%). Other position with social status include being a professor (14%) or other positions (4.5%), which stands for participation in religious or sport organizations.

3.2.1.1. GENDER Having a look at table A.1, it is immediate to infer gender differences. On the one hand, there is no particular gender difference in terms of consumption or income. For what matters education, women predict 9% increase in current enrolment in education programs. On the other hand, there are strong differences in terms of employment and household duties, with women generally appointed to inside and outside house chores (18% and 24% more) or carrying on a small retailing business (23% more), besides decreased women participation in the agricultural sector or skilled professions. Also, we notice strong differences in community participation and social relations, with women being less likely to be appointed for leadership positions, to participate in social events and also to trust the community. Those results are confirmed by a t-test on the mean.

3.2.1.2. WEALTH INDEX To account for differences in Wealth, we construct a wealth index following the dummy variable approach by Filmer and Pritchett [15]. To run the factor analysis, we include variables for household objects, rooms, water access, cooking combustible, restroom facility, livestock and land possessions [46]. Following the categorization by INE (The National Institute of Statistics of Guinea-Bissau), we divide between improved or rudimentary assets or facilities [35]. Subsequently, we run a factor analysis which loads 15 factors with eigenvalue greater than 1. We retain the first two components, as shown by Filmer and Pritchett [15]. Therefore, we divide the obtained result into quartiles, in order to discriminate four wealth levels. As a next step, we create dummy variable for each quartile, to be included in our regressions as controls.

3.2.2. ETHNICITIES' ORIGINS

A relevant first picture is given by differences in religion: in our sample, Mandinga and Fula are mostly Muslim (95% and 94%), with the aggregated group reaching 47%. The remaining four are mostly Catholic, with a relevant fraction of Balanta and Papéis declaring being Evangelic (27% and 17%). A survey by INE [10] concludes the country is overall mostly represented by the ethnicity Fula (28.5%) and Balanta

(22.5%). The former is also the group which uses the most (87%) its own dialect (Fula) on a daily basis. If in the capital different ethnicities live together and maintain constant interaction, they have in most of the cases very different geographic origin. Fula has its origins in the north and East of the country, in proximity with the border with Senegal and Guinea-Conakry, which made this ethnicity specialize in trade and small retailing activities [23]. At the beginning of the XIX century, they converted to Islam and started a *Jihad*. A similar origin is attributed to Mandinga, with some of them remembered to be horse-riders, active in the slave traffic. The ethnicity Papél showed animist traditions, sharing a strong connection with nature, which made them create religious sanctuaries. Most of them were living in the regions of Bissau and Biombo, also known as "Tchon de Pépel" for their predominance [23]. If they were originally specialized in arts and handicraft, nowadays they are well-known producers of cashew. Finally, Balanta, Manjacos, and Mancanhas were mostly farmers, living on the cost of the region, where they cultivated rice [23].

Table 3.1 – CHW Descriptive statistics

Variable	N = 1014	Percent
Age		
< 25 years	484	0.48
25 - 30 years	357	0.35
> 30 years	172	0.17
Sex		
Women	460	0.45
Man	554	0.55
Marital Status		
Single	928	0.92
Other	86	0.08
Language		
Crioulo First language	931	0.92
Other Language	83	0.08
Religion		
Muslim	325	0.32
Catholic	558	0.55
Other	131	0.13
Any Leadership Position		
	329	0.32
Education		
< 12 grade	218	0.21
Completed 12 grade only	432	0.43
Enrolled in Tertiary Education	173	0.17
Completed Tertiary Education	191	0.19
Parents' Education		
Mother no education	374	0.37
Mother >= 1 grade	639	0.63
Father no education	158	0.16
Father >= 1 grade	855	0.84
Job		
Shop owner	179	0.18
Shop employee	142	0.14
Employed in agricultural sector	155	0.15
Unemployed	433	0.43

4. METHODOLOGY

4.1. EMPIRICAL ESTIMATION METHOD

In the first part, we investigate whether motivation, social relations and characteristics of CHWs have an effect on performance. As a second step, we investigate the effects of those variables on motivation, to test if the direction of the effect goes from the covariates to motivation, which in turns may influence performance. We can design the empirical approach as simple OLS regression and Probit models, in which the independent variable y represents performance, following:

$$y_i = \alpha_0 + \alpha_1 X_i + \gamma_2 Z_i + \epsilon_i \quad (4.1)$$

In our case, for the OLS model the dependent variable is a continuous outcome-performance variable for the agent i , measured with the administrative data by VIDA. The vector X includes variables specific to each category (socio-demographic, social relations, motivation, ethnicity), meanwhile the vector Z includes the control variables that are constant in each model we design (job outcomes, employment status, education, parents' education, language, household size, age, marital status sex, religion). The regression measures the variation in outcomes which can be explained by independent variables included in our multiple regression model, using robust standard errors. In the case of the Probit model, the y is a binary variable that takes value 1 if the agent has been inactive or dropped-out of the program. Therefore, the given model predicts the probability of being inactive or dropping-out, conditional on the covariates.

Finally, following Feldhaus [14], we adopt an ordered multinomial logit model to measure the gender and employment odd-ratios on different outcome variables. Taking from cumulative probability definition, if i stands for the i^{th} agent who show a performance corresponding to the j^{th} points range, $C_{i,j}$ is the cumulative probability that the i^{th} CHW scores at the same or superior levels:

$$C_{i,j} = \sum_{k=1}^j \Pr(y_i = k)$$

4.1.1. OUTCOMES VARIABLES DESCRIPTION

Community health care workers in Bissau context have been assigned the task to visit at least once per month all the assigned families, in order to obtain the full monetary incentive. However, the incentive depends on the agents' reports of visited families number. Firstly, based on the information been provided by VIDA supervisors we construct variables to account for the total gross days of activity of an agent (see table 4.1). On average, an agent has worked 330 days, about 10 months. To better interpret this information, we define a score variable which gives one point for each month a CHW is active and

penalizes by one point for each month the worker is not active or drops-out of the program. Given the fact we have collected monthly data from September 2017 to October 2018, with the exception of March 2018, this variable could range from -10, to 12. Descriptive data tell us the mean score is 10 points. Additionally, with further administrative data we construct two independent variables: we first account for the mean value of the supervisor marks in the monthly performance evaluations, which can range from 0 to 5, as upper value. Given to heterogeneity of supervisors in marking style, we design a fixed effects model to account for differences in performance explained by this heterogeneity. We also include a dummy variable to account for supervisor' sex, to check if gender differences affect marks. Additionally, we use a variable which describes the average of the pre and post-test the supervisors administer on CHWs during monthly reunions, to test the assimilation of practices, concepts and basic health notions explained during the meetings. This evaluation can range from 0 to 20, if obtaining the best result. We also look at report rate, a variable that accounts for the percentage of delivered reports during the months the agent was marked as active, allowing us to infer actual performance during days of activity. Based on similar information, we count the total amount of reports they have delivered. This outcome, differs from the fact it is not adjusted for the real months of activity a but is a gross measure of the reports delivered.

Lastly, we construct three binary outcomes for the probit model, with dummy variables to check if after one year of Community Health agents program implementation, respectively: the i^{th} worker has ever been marked inactive or not, he ever dropped out of the program or not, he was active in the last month.

We also look at other data that account for outcomes reported by agents. Indeed, we know the inferior quality of this data because of the asymmetric information agents possess and then report on their task completion. This is also due to the fact the only implemented monitoring system is the presence of supervisors in the field. Additionally, we analyze a visit rate, to account for the average rate of visited families over the total number of assigned families, the average total number of monthly visits and the average reported days of absence.

Finally, to obtain a global performance measure, we run a principle component analysis on independent outcomes (report rate, average visits, supervisor reports, pre and post-test result, score), which loads two components with eigenvalue superior than 1 and we retain the first principal component, which explain larger variation of the chosen variables.

Table 4.1 – Outcome Variables Synthesis

Variable	Description	Range	Mean/ σ	N
Report Rate	Percentage of delivered reports in the months the agent was marked as active	"0%-100%"	0.66 (0.31)	1012
Average absence per month	Average reported days of absence	"0-30"	0.68 (1.97)	859
Monthly visit rate	Average rate of visited families over the total number of assigned families	"0%-100%"	0.84 (0.17)	938
Average total visits number	Average total number of monthly visits	"1/68"	44.16 10	938
Total Reports	Total amount of reports delivered	"0/12"	7.6 (3.9)	1012
Score variable	Variable that adds one point for each month a CHW is active and detracts one point for each month of inactivity	"-10/12"	10.1 (4.53)	1012
Total days of activity	Total gross days of activity	"30/360"	330.68 (68.34)	1012
Mark in pre and post test*	Average of the pre and post-test administered by Supervisors during monthly reunions	"0/10"	12.07 (5.17)	1012
Supervisor Report	Average value of Supervisor marks in the monthly performance evaluations	"0/5"	3.95 (0.78)	934
Dummy Inactivity	Dummy variable equal to 1 if the CHW has ever missed one month of activity		0.2 (0.4)	1012
Dummy Drop-out	Dummy variable equal to 1 if the CHW has ever dropped-out of the program		0.16 (0.37)	1012
Dummy Active Now	Dummy variable equal to 1 if the CHW has been active in the last month (October 2018)		0.81 (0.39)	1012

4.1.2. MOTIVATION VARIABLES DESCRIPTION

In our survey, we have decided to infer agents' motives selecting 9 different motivation variables: here we explain what the other variables mean and refer to their literature.

According to the standard economic theory, a rational, selfish, and extrinsically motivated "homo oeconomicus" [13]; [5], should respond to external incentives, in turns affecting performance. If this neoclassical theory is a fundamental of economic theory, empirical confirmations of the theory are not so easy to find in the literature. How Kuvaas [31] points-out, empirical research on the linkage between extrinsic motivation and performance has been marginal and the few existing studies show ambiguous effects on workers' performance. Another motivation source is *task significance*, defined as an objective structural design of the job which aims at increasing performance by enhancing employees' perception of the task effectiveness [43]. A step above is the *social impact* of a job, defined as the magnitude of the impact employees perceive their job actually has on other people [19]. Another mechanism is instead *social worth*, defined as the degree to which workers believe their actions are appreciated by recipients of the program [19]. However, people appraise their experiences through the "lens of perception" [41]: Grant and Cambell [20] distinguish between *perceived pro-social impact*, meaning the subjective job experience of doing good to other people, rather than *perceived antisocial impact*, defined as the subjective experience of harming others. The authors [20] show increased perception of negative social impact lead to decreased job satisfaction and burnout, instead Carador [8] concludes perceived antisocial impact produces a negative effect on job performance, in an empirical experiment on a pool of US Alumni. We take the last two motivation variables from Ashraf and Lee [2]: *desire for positive pro-social impact*, in other words how much an individual desires and shows psychological benefits from the positive impact of

his work and finally *affective commitment to beneficiaries*, defined as the moral connection with recipients of the program.

5. RESULTS

In this section we summarize main results, firstly developing a discussion on performance, than referring on Heterogeneous effects and finally differences in motivation.

5.1. WHAT DRIVES PERFORMANCE?

5.1.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS

We start our analysis examining the results of the basic model (see Table A.4 for OLS Model and A.8 for Probit model). We notice those agents who held any leadership position perform on average 2 more visits on a monthly basis, significant at the 5 percent.

Moreover, as Kambarami's [26] points-out, job status and outcomes can influence performance. In our context the first and very evident outcome is the effect of unemployment on performance. This category predicts on average 1.25 points less in the score (19 days less of activity), significant at the 1 percent level. Those people also perform 0.03 points less in terms of monthly visit rate, significant at the 5 percent. Also the probit models confirms those workers are 45 percent more likely to be marked as inactive, 49 percent more likely to drop-out and 39 percent to be inactive in the present, in open contrast with findings by Olang'o [38], which found having a job was a predictor for increased drop-out rates, because of reduced free time.

Looking instead at the employed part of the sample, statistical evidence confirms that only business owners show a negative effect on performance, having normally worked 13 days less. As well, they report to be 0.67 days more absent per month, significant at the 10 percent, and are found more likely to be inactive in the past, present or drop-out.

Secondly, another interesting outcome is related to gender. In fact, we observe women obtaining an inferior mark in the pre and post tests, quantified by a significant average of 0.94 less in terms of mark. If on the one hand female CHWs report to be 0.39 days less absent per-month, they also deliver on average about 8 percent reports less, significant at the 1 percent, and a total of 0.8 reports less (significant 10%).

On top of that, we find each additional year of education to increase the likelihood of being inactive (8.6%), drop-out (8.8%) and finally not being active now (7.5%). In this case, results are aligned with previous studies [27]: also in Bangladesh setting [1], more educated agents are found more likely to drop-out.

The last variable we observe showing significant effects on performance is wealth. In fact, CHWs included in the two superior quartiles, perform significantly worse in comparison to the baseline category with lowest wealth, in terms of activity, tests' marks, report rate (10% significance) and finally monthly visit rate (1% level). The result is confirmed by the probit model, which confirms the upper quartiles are significantly more likely to drop-out or be inactive, pretty much in line with CHWs' study in Bangladesh context [1]. Interpreting one coefficient, the wealth index suggest agents in the top quartile generally perform inferior monthly visit rate (significant at 1%) by a figure of about 5 percentage points, compared to the baseline category (lowest quartile).

Similar results are drawn in almost every alternative model we construct. Otherwise, no significant outcome is found to correlate with money transfers, consumption and a different specification of education models, differentiating for those agents who have completed secondary or tertiary education.

5.1.1.1. GENDER AND UNEMPLOYMENT: ODD-RATIOS FOR PERFORMANCE Given the fact we found significant performance differentials for gender and unemployment, we decide to narrow in the mechanism and take a comprehensive picture, with the aid of ordered multinomial logit or simple logit models, calculating in each case odds-ratios. The odds ratio for gender is the odds that a female agent has a higher score, compared to male colleagues, keeping all the other factors equal. The same holds for an unemployed agent over employed. In this case, the p-value correspond to a test on the odds ratio, in which under the null the odds ratio is equal to 1, implying no significant association between two outcomes, instead the alternative hypothesis states the odds-ratio is different than one, implying differences in relative probability.

For female, we confirm significant results in terms of report rate, average total visits, pre and post-test result, supervisor report and activity. We run the model on supervisor evaluation with fixed effects and dummies to account for the gender of the supervisor. For unemployed, the odds-ratio on monthly visit rate, activity, probability of drop-out, being inactive in the present or past, are significant.

Interpreting the odds-ratio on supervisor reports, we can say for female CHWs, *ceteris paribus*, the odds of being marked highly than man in supervisor reports, in other words being in a higher category of performance, decreases by 31 percent, significant at the 1%. In a similar way, the odds of women showing a superior report rate than man decreases by 35 percent. For unemployed, compared to employed, the relative probability of dropping-out increases by 135 percent, *ceteris paribus*, significant at the 1%, while the relative probability to be inactive increases by 95 percent, also significant at the 1% (see Table 5.1). To confirm this intuition, the relative probability of being active in the present decreases by 51 percent for unemployed.

This analysis helps us conclude our results differ previous literature [26] [9] that found women

performing better in a CHW program: in our case, women are less likely to deliver a superior amount of assigned monthly reports, to receive a superior mark in superior reports or in the written tests. On the other hand, also unemployed CHWs are found to perform worse: they are about twice as like to drop-out or be inactive (present or past) and show a decrease in the relative probability of delivering monthly reports by 23%.

Table 5.1 – Female and Unemployed Community Health Workers Odd-Ratios

Variable	OR (Female)	OR (Unemployed)	N
Report Rate	0.65*** (0.08)	0.78* (0.10)	1010
Average absence per month	0.86 (0.16)	0.77 (0.15)	857
Monthly visit rate	1.01 (0.13)	0.77* (0.10)	936
Average total visits number	0.76** (0.09)	0.72** (0.10)	936
Total Reports	0.69*** (0.08)	0.75** (0.10)	1,010
Score variable that gives 1 point for one month of activity and penalizes	0.78 (0.13)	0.51*** (0.10)	1,010
Total days of activity of a CHW	0.78 (0.13)	0.51*** (0.10)	1,010
Mark in pre and post test	0.78** (0.10)	0.83 (0.11)	930
Supervisor Report	0.69*** (0.09)	0.79* (0.11)	932
Dummy variable equal to 1 if the CHW has ever missed one month of activity	1.31 (0.23)	2.15*** (0.39)	1,010
Dummy variable equal to 1 if the CHW has ever dropped out of the program	1.04 (0.19)	2.35*** (0.48)	1,010
Dummy variable equal to 1 if the CHW has been active in the last month	0.87 (0.15)	0.51*** (0.10)	1,010

Control variables included: job outcomes, employment status, education, parents' education, language, household size, age, marital status, sex, religion. Robust standard errors in parentheses. Fixed effect and Supervisor Sex dummies included in the Supervisor Report estimation

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.1.2. SOCIAL RELATIONS AND COMMUNITY ACTIVITIES

As previous authors remarked, "community embeddedness" [7], meaning social interactions, relations and participation, are shown to be important determinants for community health care workers' performance. In the next part of the analysis, we focus on the correlation between social relations and performance variables (see Tables A.5, A.8).

In our case, the only significant result is the correlation between those who have participated in the last 12 month to any kind of social meeting or activity (associations, meetings, seminars) and performance. Those people are on average 18 days more active than their colleagues, less likely to be inactive in the past (48%) and the present (47%), or to drop-out(44%). As well, they normally deliver 8 percent more reports, a gross total of 1.2 more reports and 19 days more of activity, on average.

5.1.3. MOTIVATION

As a next step, we ask which are the motivation variables that correlate with performance in the aggregate, to infer which is the main source of motivation and how this relates with performance for the entire sample. After having this done, we immediately notice the effect of those who are extrinsically motivated

(see Table A.6 for OLS model and A.9 for Probit model). In fact, one more point in extrinsic motivation corresponds to about 1.3 days more of activity (0.09 more points in the performance score, *ceteris paribus*, significant at the 5%). In addition, the same variable is found to correlate with other performance variables: one point more in extrinsic motivation corresponds to 2 percent decrease in likelihood of being active now and in the past, and not to surrender, significant at the 10 percent. It also corresponds to more 0.06 percentage points in the monthly report rate and a gross handing-in of 0.09 more reports, significant at the 1%. This results openly contrast with recent findings by Kuvaas [31], which argues extrinsic motivation either has no effect or affects negatively performance in the context of gas station employees in Norway. However, our context appears to be at the odds with Norway and we found no other papers that directly investigate extrinsic motivation and performance, especially in developing countries.

Another significant result on performance is given by perceived negative social impact: Grant and Cambell [20] show the linkage between negative social impact and decreased job satisfaction. If this creates in satisfaction, the perceived antisocial impact on performance linkage is not addressed in the literature. An exception is a study by Carador [8] in a developed country. In our Community Health Agents setting in Guinea-Bissau, we reach a similar conclusion: we find workers with higher perception of negative social impact are inferiorly marked by Supervisors. *Ceteris paribus*, each additional point in this motivation variable corresponds to a decrease in supervisor evaluations by 4 percentage points, significant at the 1 percent level with the fixed effects model.

5.1.4. ETHNICITY

A paper by Murayama [36] is one of the first to investigate on the relation between ethnicity and performance. If in their case the mechanism was a facilitated interaction and connection between recipient and deliverer of the program if belonging to the same ethnic group, in our study we aim at investigating the direct relationship between ethnicity and performance (see tables A.7, A.9).

When we run the models, we notice agents from the ethnicity Papel are 34 percent more likely not being active in the present, significant at the 10 percent and confirmed by the t-test ($p\text{-value}=0.09$). This is, however, the only significant result we find, thus concluding ethnicities alone do not explain significant performance differentials.

5.1.5. HETEROGENEOUS EFFECTS

If in the previous sections we have showed how some socio-economic, motivation and social community variables have significant effect on performance, we suspect for the existence of heterogeneous effects on performance, due to the existence of sub-populations defined by different interactions with the

community.

We run a model to check for socio-demographic interactions with social roles variables (see Tables 5.2). When we look at interactions between unemployed and social relations we see interesting results. The interaction with community leadership position is in fact significant at the 5% level (Wald test $p=0.00$) and predicts about 0.6 points increase in the overall performance. The same result we get when we disaggregate the type of leadership positions, with elected and non-elected leadership positions significantly interacting with unemployed in terms of performance.

When repeating the same exercise for women, we find female CHWs who also have inside-household duties perform about 0.88 points less (1%), also confirmed by a Wald test (p -value=0.00). Otherwise, we do not find evidence for differences in community interaction for ethnicities.

Table 5.2 – Interaction Model table

	(1)	(2)
	Overall Performance	
Controls	✓	✓
Employment Status: Unemployed=1	-0.556*** (0.121)	
Employment Status: Unemployed		-0.356*** (0.103)
Dummy for any leadership position=1	-0.306* (0.123)	
Employment Status: Unemployed=1 × Dummy for any leadership position=1	0.623** (0.202)	
Sex (Female)	-0.282** (0.0966)	0.541* (0.230)
Household Duties=1		0.0492 (0.131)
Sex (Female)=1 × Household Duties=1		-0.877*** (0.247)
Observations	1012	1008
R^2	0.062	0.061
F	3.152	3.323

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.2. WHAT DRIVES MOTIVATION?

Given the fact that motivation is found to influence performance, even if only for two indicators over nine, it seems equally important to investigate the relationship between motivation and different socio-economic, demographic, cultural and community variables that could explain different

motivation orientations, to better understand whether the relationship goes from socio-demographics to performance directly or they affect performance through motivation.

As a consequence, we estimate two models, the first one including socio-demographics and ethnicities, and the second, expanding with community involvement variables (see Tables 5.3, 5.4). Having a first look at ethnicities and motivation, our analysis does not find evidence of differences in motivation across ethnicities.

When looking at the results on socio-demographic characteristics, the picture changes. Firstly, motivation is different across age: an additional age corresponds to increase in perceived pro-social impact, at a decreasing rate. A very interesting result is the negative effect that education implies on the perception of the significance of the task; in fact, one additional year of education corresponds to 0.11 points less in this variable and 0.06 points less in perceived pro-social impact, but this effect goes away once we add more controls. However, in both cases those who are currently enrolled in an education program, give less significance on the task nature (0.47 points less, significant at the 1%). Education level is also found to correlate with antisocial impact perception at the 10% level. Similarly, women show superior negative social impact perception (0.29 points more, significant at the 10%), which we found to negatively correlate with Supervisor reports, and they also receive increased task-significance evaluation.

When expanding the model to look for the effect of community participation variables, we found those who have covered leadership positions give more significance to the task (0.53 points, significant at the 5 percent), perceive 0.3 points more social impact and 0.18 points more affective involved with beneficiaries. However, we also find a negative correlation of the number of appointments within the community and few motivation variables: willingness to have pro-social impact, perceived social impact and value, extrinsic motivation and affective involvement with beneficiaries. We decide to investigate in detail the mechanism behind, with the aid of t-tests. As a consequence, we find those results are determined by some specific type of community positions. In fact, teachers (15% of the sample) recognize inferior social value and social impact on the task, such as the category "other", which includes ($p=0.09$) very heterogeneous positions like appointments for the neighbourhood organizations, football teams and religious volunteering organizations. However, those workers are more willing to have a pro-social impact, more pro-socially motivated ($p=0.04$), inferiorly extrinsic motivated ($p=0.4$ and $p=0.6$) but inferiorly involved with beneficiaries ($p=0.06$) of the program. The opposite is true, instead, for community leaders, who score a significant positive difference in terms of perceived social-impact.

Lastly, this model predicts the biggest negative determinant of motivation variables is the first language spoken. In fact, those who speak creole as a first language perform significantly less in every variable, predicting 0.52 more points in perceived negative social impact. The result is statistically confirmed by a t-test, which makes us reject the null in every case except one (Involvement with beneficiaries).

Table 5.3 – Motivation Determinants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Positive pro-social impact desire		Affective involvement beneficiaries		Extrinsic Motivation		Perceived antisocial impact		Perceived pro-social impact	
Age	0.212 (0.164)	0.157 (0.153)	0.0736* (0.0351)	0.0536 (0.0333)	-0.0548 (0.210)	-0.108 (0.206)	-0.110 (0.0799)	-0.0915 (0.0795)	0.118* (0.0546)	0.105* (0.0531)
Age Squared	-0.00358 (0.00281)	-0.00277 (0.00263)	-0.00116 (0.000599)	-0.000836 (0.000566)	0.000511 (0.00342)	0.00129 (0.00340)	0.00189 (0.00138)	0.00162 (0.00137)	-0.00187* (0.000921)	-0.00167 (0.000900)
Marital Status (Single)	-0.0128 (0.410)	-0.0603 (0.409)	-0.0117 (0.0828)	-0.0213 (0.0837)	-0.453 (0.725)	-0.566 (0.715)	0.164 (0.190)	0.216 (0.195)	0.0662 (0.141)	0.0555 (0.145)
Sex (Female)	-0.231 (0.240)	-0.368 (0.230)	0.0878 (0.0522)	0.0626 (0.0515)	0.658 (0.365)	0.391 (0.371)	0.287* (0.126)	0.270* (0.131)	-0.0510 (0.0869)	-0.103 (0.0840)
Education Level	-0.0312 (0.0894)	0.0267 (0.0786)	-0.00464 (0.0186)	0.0140 (0.0169)	0.0286 (0.134)	0.0557 (0.128)	0.0927* (0.0462)	0.0898 (0.0467)	-0.0645* (0.0294)	-0.0476 (0.0273)
Being a student during the academic year 2016/2017	-0.457 (0.244)	-0.315 (0.220)	-0.0724 (0.0517)	-0.0712 (0.0491)	-0.670 (0.371)	-0.462 (0.345)	0.148 (0.122)	0.153 (0.119)	-0.0618 (0.0853)	-0.0335 (0.0787)
Dummy for any leadership position	0.127 (0.260)	0.474 (0.318)	0.0700 (0.0548)	0.182* (0.0735)	0.354 (0.405)	0.777 (0.498)	-0.0963 (0.133)	-0.0893 (0.173)	0.0497 (0.0920)	0.115 (0.120)
Creole as first language	-0.893** (0.338)	-0.875* (0.343)	-0.101 (0.0798)	-0.128 (0.0804)	-1.311* (0.653)	-1.140 (0.641)	0.524** (0.185)	0.512** (0.183)	-0.286* (0.122)	-0.308* (0.124)
Employment Status: Unemployed	-0.183 (0.276)	-0.0356 (0.315)	0.0144 (0.0565)	0.0187 (0.0665)	-0.637 (0.419)	-0.683 (0.501)	-0.207 (0.128)	-0.318 (0.189)	0.0168 (0.0968)	0.0336 (0.116)
Fula	0.0747 (0.532)		0.0421 (0.114)		-0.249 (0.877)		-0.177 (0.289)		0.0794 (0.195)	
Mancanha	0.413 (0.399)		0.103 (0.0895)		0.884 (0.638)		0.114 (0.212)		0.0845 (0.146)	
Mandinga	0.401 (0.530)		0.0935 (0.116)		1.465 (0.832)		-0.128 (0.287)		0.0562 (0.202)	
Papéis	-0.433 (0.467)		-0.0463 (0.103)		-0.595 (0.677)		0.0174 (0.194)		-0.145 (0.162)	
Manjacos	0.0397 (0.375)		0.139 (0.0778)		-0.0660 (0.567)		0.352 (0.208)		0.0251 (0.136)	
Other	-0.307 (0.435)		0.0392 (0.0910)		0.460 (0.656)		0.0563 (0.204)		-0.0205 (0.159)	
Social participation Dummy		0.573 (0.386)		0.0334 (0.0829)		0.963 (0.601)		0.301 (0.202)		0.108 (0.135)
Volunteer in the family		-0.164 (0.265)		-0.0458 (0.0590)		0.707 (0.414)		-0.240 (0.131)		0.112 (0.0904)
Number of activities		0.0341 (0.0823)		0.00107 (0.0182)		0.206 (0.134)		-0.0244 (0.0478)		-0.0143 (0.0307)
Number of appointments		-0.292* (0.137)		-0.0660* (0.0313)		-0.618** (0.201)		0.0245 (0.0742)		-0.0695 (0.0487)
Appointment Dummy		-0.303 (0.556)		-0.0982 (0.110)		1.250 (0.837)		-0.313 (0.361)		0.213 (0.193)
Volunteer		0.568 (0.518)		0.119 (0.107)		-0.00649 (0.747)		-0.136 (0.337)		-0.104 (0.177)
Observations	1011	1001	1011	1001	1011	1001	1011	1001	1011	1001
R ²	0.032	0.031	0.028	0.027	0.033	0.041	0.046	0.045	0.029	0.028
F	1.317	1.487	1.305	1.259	1.428	1.927	1.929	1.957	1.199	1.352

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Table 5.4 – Motivation Determinants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Perceived Social Impact	Pro-social Motivation	Task Significance	Perceived Social Value				
Age	0.0999 (0.0541)	0.0808 (0.0499)	-0.0144 (0.0819)	-0.0128 (0.0819)	0.140 (0.0848)	0.107 (0.0805)	0.0797 (0.0427)	0.0694 (0.0395)
Age Squared	-0.00155 (0.000934)	-0.00123 (0.000861)	0.000304 (0.00135)	0.000201 (0.00136)	-0.00229 (0.00144)	-0.00178 (0.00137)	-0.00117 (0.000720)	-0.00100 (0.000659)
Marital Status (Single)	-0.0775 (0.129)	-0.101 (0.127)	0.178 (0.253)	0.190 (0.256)	0.0292 (0.216)	0.0231 (0.211)	-0.0694 (0.106)	-0.0811 (0.106)
Sex (Female)	-0.000193 (0.0833)	-0.0569 (0.0784)	-0.265 (0.141)	-0.221 (0.145)	0.258* (0.126)	0.222 (0.126)	-0.0417 (0.0672)	-0.0726 (0.0663)
Education Level	-0.0124 (0.0300)	0.00531 (0.0268)	0.0440 (0.0523)	0.0303 (0.0520)	-0.116** (0.0447)	-0.0867* (0.0418)	-0.0218 (0.0252)	-0.0108 (0.0229)
Being a student during the academic year 2016/2017	-0.115 (0.0836)	-0.0659 (0.0780)	-0.103 (0.140)	-0.0566 (0.135)	-0.469*** (0.127)	-0.431*** (0.123)	-0.0570 (0.0687)	-0.0305 (0.0655)
Dummy for any leadership position	0.134 (0.0883)	0.317** (0.117)	0.248 (0.151)	0.0760 (0.196)	0.458*** (0.132)	0.532** (0.169)	-0.0469 (0.0705)	0.0325 (0.0944)
Creole as first language	-0.437*** (0.100)	-0.452*** (0.0966)	-1.043*** (0.265)	-1.091*** (0.266)	-0.420* (0.192)	-0.403* (0.189)	-0.246** (0.0923)	-0.235** (0.0895)
Employment Status: Unemployed	-0.0280 (0.0915)	0.0258 (0.116)	0.0493 (0.158)	-0.0356 (0.205)	0.0193 (0.139)	0.139 (0.174)	-0.0412 (0.0715)	0.00284 (0.0905)
Fula	-0.0329 (0.180)		0.156 (0.360)		0.0596 (0.284)		0.00870 (0.172)	
Mancanha	0.0318 (0.134)		-0.184 (0.269)		0.0449 (0.232)		0.144 (0.135)	
Mandinga	0.0586 (0.177)		-0.127 (0.326)		0.154 (0.278)		0.161 (0.159)	
Papéis	-0.201 (0.156)		-0.316 (0.239)		0.0187 (0.233)		0.145 (0.125)	
Manjacos	-0.164 (0.149)		-0.175 (0.238)		0.298 (0.205)		0.240* (0.114)	
Other	-0.0611 (0.143)		-0.226 (0.243)		0.146 (0.219)		0.0778 (0.130)	
Social participation Dummy		0.361* (0.148)		-0.276 (0.235)		0.159 (0.199)		0.224 (0.121)
Volunteer in the family		0.0548 (0.0903)		0.153 (0.166)		0.0919 (0.137)		0.0197 (0.0788)
Number of activities		0.00413 (0.0285)		0.0499 (0.0519)		0.0344 (0.0465)		0.0278 (0.0240)
Number of appointments		-0.149** (0.0479)		0.0647 (0.0830)		-0.120 (0.0777)		-0.101* (0.0419)
Appointment Dummy		-0.106 (0.203)		0.154 (0.322)		0.0898 (0.266)		0.196 (0.141)
Volunteer		0.217 (0.194)		-0.332 (0.300)		0.237 (0.261)		0.00163 (0.121)
Observations	1011	1001	1011	1001	1011	1001	1011	1001
R ²	0.035	0.043	0.043	0.036	0.050	0.047	0.027	0.040
F	1.645	2.358	1.786	1.549	1.930	2.380	1.389	2.026

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6. DISCUSSION AND POLICY RECOMMENDATION

We found evidence that social relations might in part explain performance: those who are active in the community or have recently covered leadership positions, show a positive outcome. As other papers suggested, the selection [22] process can be relevant to determine CHWs' performance: it could be an effective strategy superiorly appraising those individuals who have covered leadership positions or are involved within the community. In terms of motivation, we have seen leaders are superiorly motivated for the CHW program; however, some social positions, besides their increased desire to have a pro-social impact and increased pro-social motivation, are inferiorly involved with beneficiaries of the program, recognize inferior social value and social impact on the task. It might be relevant to research in depth the reason why professors have such preferences, especially recalling how in various settings pro-social agents show better public service delivery or increased retention rates ([44], [2], [11]).

In addition, we recall how in the previous analysis we found a significant correlation between unemployment³ and overall inferior levels of performance (activity, report rate, monthly visit rate, retention). Our only measure of knowledge (pre and post-test) does not suggest those people have inferior sector-specific expertise. Community interaction seems to have a determinant role in unemployed agents' performance: the heterogeneous group of unemployed agents, who are more involved in the community, performs significantly better. Those who have recently held a leadership (either elected or not) position, are performing much better than those unemployed that did not cover leadership positions. An additional mechanism here may be the intensified perception the program lacks adequate financial incentives, a serious issue for those who are unemployed and have financial troubles [29]. We lack however, adequate data to confirm this hypothesis.

Furthermore, we can analyse the picture of the agents in terms of education and age. In our setting, more educated agents show inferior retention rates. A similar conclusion is drawn in Peru context [6] by Brown, who argues CHWs with higher educational qualifications may have better opportunities for alternative employment, being more likely to change job position and drop-out. On the other hand, we do not find evidence that additional education levels explain other outcomes such tests, reports delivery or monthly visits. Additionally, we find more educated people or agents that have been enrolled in education programs are less motivated in terms of significance of the task perception and perceived pro-social impact. However, we do not find these motivation variables to correlate with performance. Consideration are different for older community health care workers: those agents show, in fact, significant more connection with beneficiaries of the program and increased perceived pro-social impact, even if those variables do not explain different performance levels.

³This part of the sample includes people who are currently looking for a job and did not cover any position in the past 12 months.

Referring about gender, we found female workers showing inferior outcomes in the written test, supervisor evaluation and inferior delivered monthly and total reports. If tests are reliable predictors of knowledge, this would imply women have inferior sector specific expertise, therefore raising potential concerns in terms of public service efficient delivery. Suspects are confirmed when we notice inferior outcomes in terms of reports and supervisor marks. However, in the descriptive analysis we have shown women do not have inferior education, compared to man. When looking at motivation, women show increased antisocial impact perception, which we found to negatively correlate with performance (Supervisor reports). If our intuition is valid, considering the difference is not explained by education, and we cannot test for differences in terms of ability, a cost-effective intervention could, for example, tackle methods to foster knowledge retention during trainings.

Furthermore, as we have shown, pretty much in line with other developing countries settings [12], job professions are differentiated for man and woman, with the latter facing the burden of increased household duties. The analysis of heterogeneous effects for gender demonstrates how women who have house duties to accomplish, show inferior overall performance, compared to those who do not have such obligations. Nevertheless, looking at descriptive statistics for participation in community activities and general social interaction, we notice inferior figures for women, who are also under represented in leadership roles. When running heterogeneous effects models for differences in performance across leadership roles or community participation for women, but we do not find evidence of different performance of women in leadership positions in our program.

Overall, we have shown how people that are extrinsically motivated significantly perform better, meanwhile those who show higher antisocial impact perceptions perform worse, in terms of Supervisor reports. The effect of extrinsic motivated people on performance appears quite sharp (score, visits rate, report rate) and it might be desirable to select those people that score particularly high in terms of extrinsic motivation, maybe with the aid of screening tests during the selection process. However, such motivation orientation remains very difficult to test in practice. On the contrary, the negative effect of antisocial impact on performance does not have the same magnitude and we have seen that some demographics (education and gender) can explain this motivation orientation. In this case, the result highlights some issues, as those agents superiorly perceive they have caused some harm or, in general, negative impact, as a consequence of their job duties. It might be relevant to narrow in and investigate which are the factors that contribute generating this job's effect negative perception, also because this motivation correlates with negative performance.

7. CONCLUSION

We found, in line with previous papers, that some socio-demographic characteristics like education, gender, wealth, job status and community "embeddedness" correlate with community health workers performance. In the specific, we conclude higher education corresponds to increased drop-out rates, while for female we find evidence of performance differentials in terms of written health-knowledge tests, supervisors evaluations and report rates. We give evidence that this result could be driven by the heterogeneous group of women with house duties to accomplish. We also develop an extensive discussion on unemployed agents, which we report to perform inferiorly in our program. By contrast, we notice that unemployed workers that have recent experience in covering leadership roles are performing much better than their counterpart.

Moreover, we investigate the relation between motivation and performance in our Community Health Care workers context. We find evidence that extrinsically motivated agents perform better, as opposed to agents with stronger antisocial impact perceptions, who perform worse. Besides scholars have extensively discussed the concept of extrinsic motivation and investigated the effect of extrinsic incentives, there is still a lack of empirical studies that address the link between extrinsically motivated workers and their job performance, with the exception of a research on Norwegian employees that finds opposite results. For negative perceived social impact, instead, we confirm the intuition supported by psychological motivation theories, which found small empirical evidence.

Few community relations variables are found to significantly correlate with performance: leadership position and social participation correspond to improved performance levels. Also, community participation can explain motivation differentials in our context. We conclude covering many social roles can crowd-out motivation for the CHW program, but this appears to be driven by some social professions or positions like professor or volunteer in other organizations.

Given the richness of our data, we explore if different ethnicity can explain performance or motivation differentials. In both cases we find few significant results.

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A. APPENDIX

A.1. TABLES

Table A.1 – Gender Differences Descriptive Statistics

Variable	N	Mean	Difference	pF
Marital Status (Single)	1014	0.92	-0.020 (0.018)	0.26
Income	1013	101463.9	-11592.7 (17502.2)	0.51
Monthly per-capita consumption	1004	21333.2	260.1 (1583.3)	0.87
Weekly alcohol consumption	1013	7275.0	-1747.1 (1012.3)	0.085*
Education Level	1014	12.4	-0.012 (0.093)	0.90
Completed Secondary Education	1014	0.81	-0.044* (0.026)	0.091*
Completed Tertiary Education	1014	0.067	0.033*** (0.018)	0.059*
Being a student during the academic year 2016/2017	1014	0.46	0.093*** (0.031)	0.00***
Mother Education	1013	4.43	0.60 (0.32)	0.06*
Father Education	1014	7.77	0.86 (0.36)	0.02**
Parents with low Education	1014	0.45	-0.085*** (0.031)	0.01***
Employment Status: Unemployed	1014	0.44	-0.034 (0.031)	0.28
Working in the small retailing sector	1014	0.21	0.23*** (0.029)	0.00***
Working as skilled non-professional	1005	0.15	-0.12*** (0.017)	0.00***
Working in the agricultural sector	1014	0.21	-0.12*** (0.022)	0.00***
Household Duties	1010	0.76	0.18*** (0.021)	0.00***
Outside Household duties	1009	0.51	0.24*** (0.029)	0.00***
Volunteer in the family	1009	0.25	-0.036** (0.027)	0.17
Number of activities	1014	2.75	-0.68*** (0.10)	0.00***
Number of appointments	1014	2.09	-0.55*** (0.086)	0.00***
Social participation Dummy	1014	0.90	-0.089*** (0.022)	0.00***
Appointment Dummy	1014	0.90	-0.087*** (0.023)	0.00***
Talking with leader dummy	1014	0.86	-0.056** (0.024)	0.02**
Do you trust your community?	1013	0.90	-0.094*** (0.022)	0.00***
Dummy for any leadership position	1014	0.40	-0.16*** (0.029)	0.00***
Volunteer	1014	0.84	-0.079*** (0.025)	0.00***

Table A.2 – Ethnicities Statistics

Variable	N	Mean (Balanta)	Papéis	Mandinga	Manjacos	Fula	Mancanha	Others	pF
Age	1013	24.6	1.94*** (0.56)	1.51** (0.63)	1.55*** (0.59)	0.30 (0.54)	1.69*** (0.57)	1.37 (0.55)	0.00***
Marital Status (Single)	1014	0.96	-0.052* (0.026)	-0.060** (0.031)	-0.0065 (0.023)	-0.077** (0.032)	-0.056* (0.031)	-0.087*** (0.029)	0.01*
Sex (Female)	1014	0.42	-0.014 (0.053)	-0.044 (0.057)	0.064 (0.057)	0.12** (0.058)	0.11* (0.059)	0.032 (0.053)	0.06*
Education Level	1014	12.4	-0.0068 (0.15)	-0.24 (0.19)	0.20 (0.16)	0.011 (0.16)	0.16 (0.16)	-0.12 (0.15)	0.29
Being a student during the academic year 2016/2017	1014	0.58	-0.15*** (0.053)	-0.014 (0.058)	-0.072 (0.057)	-0.022 (0.058)	-0.15*** (0.059)	-0.15*** (0.053)	0.01***
Completed Tertiary Education	1014	0.82	-0.053 (0.044)	-0.098** (0.050)	0.0087 (0.043)	-0.057 (0.048)	-0.0077 (0.046)	-0.046 (0.043)	0.33
Completed Secondary Education	1014	0.077	0.0013 (0.029)	0.0055 (0.032)	0.035 (0.034)	-0.0027 (0.031)	0.026 (0.034)	-0.017** (0.027)	0.76
Mother Education	1013	4.13	0.066 (0.53)	0.048 (0.59)	0.42 (0.56)	0.66 (0.58)	3.09*** (0.62)	0.39 (0.53)	0.00***
Father Education	1014	7.85	-0.64 (0.63)	0.0082 (0.67)	0.65 (0.64)	0.23 (0.67)	1.98*** (0.66)	0.45 (0.61)	0.01**
Income	1013	96907.2	12164.5 (27458.1)	-28493.5 (27145.3)	-24836.8 (25791.7)	1044.4 (41123.4)	11640.1 (28319.0)	14142.2 (33456.9)	0.49
Monthly per-capita consumption	1004	17802.2	3594.8 (2247.0)	5748.3** (2721.3)	3909.3 (2674.6)	7453.8** (3252.5)	4838.8* (2571.9)	2179.6 (2075.3)	0.10
Catholic	1014	0.68	0.077 (0.048)	-0.63*** (0.040)	0.16*** (0.047)	-0.63*** (0.040)	0.26*** (0.041)	-0.26*** (0.052)	0.00***
Muslim	1014	0.022	0.0021 (0.016)	0.92*** (0.024)	0.0080 (0.018)	0.93*** (0.022)	-0.0048 (0.016)	0.45*** (0.040)	0.00***
Creole as first language	1014	0.93	0.023 (0.025)	-0.027 (0.033)	-0.011 (0.030)	-0.13*** (0.041)	0.028 (0.027)	0.012 (0.026)	0.01***
Household People	1014	10.5	-0.89 (0.57)	1.43** (0.69)	-1.30** (0.62)	-1.11** (0.54)	-2.54*** (0.55)	-0.26 (0.57)	0.00***
Employment Status: Unemployed	1014	0.49	-0.14*** (0.052)	-0.025 (0.059)	-0.059 (0.057)	-0.025 (0.059)	-0.15*** (0.058)	-0.057 (0.053)	0.04**
Working in the small retailing sector	1014	0.28	0.045 (0.049)	0.074 (0.055)	0.050 (0.053)	0.0082 (0.053)	0.089 (0.056)	0.019 (0.049)	0.65
Working as skilled non-professional	1005	0.077	0.043 (0.032)	-0.012 (0.030)	0.020 (0.033)	0.022 (0.034)	0.0089 (0.033)	0.044** (0.032)	0.59
Working in the agricultural sector	1014	0.16	0.015 (0.040)	-0.060 (0.038)	-0.024 (0.040)	-0.093*** (0.035)	0.12** (0.049)	0.0022 (0.039)	0.00***
Dummy for any leadership position	1014	0.31	0.084 (0.051)	0.041 (0.055)	0.047 (0.054)	-0.049 (0.053)	-0.038 (0.054)	-0.0079 (0.049)	0.18
Volunteer in the family	1009	0.20	0.038 (0.044)	0.049 (0.049)	0.057 (0.048)	0.082 (0.050)	0.040 (0.050)	0.019 (0.043)	0.75
Number of activities	1014	2.20	0.11 (0.17)	0.52*** (0.20)	0.057 (0.19)	0.16 (0.19)	0.32* (0.19)	0.57*** (0.18)	0.01**
Number of appointments	1014	1.74	0.21 (0.14)	0.11 (0.15)	0.12 (0.16)	0.19 (0.16)	0.066 (0.16)	0.090 (0.15)	0.84
Appointment Dummy	1014	0.85	0.045 (0.036)	0.038 (0.039)	-0.019 (0.042)	0.046 (0.039)	0.016 (0.042)	-0.049 (0.041)	0.17
Volunteer	1014	0.80	0.029 (0.042)	0.014 (0.046)	-0.037 (0.047)	0.038 (0.045)	0.040 (0.045)	-0.042 (0.045)	0.43

Table A.3 – Ethnicities Outcome Variables

Variable	N	Mean (Balanta)	Papéis	Mandinga	Manjacos	Fula	Mancanha	Others	pF
Report Rate	1012	0.64	0.013 (0.035)	0.044 (0.035)	0.012 (0.035)	-0.026 (0.037)	0.0063 (0.038)	0.077** (0.033)	0.11
Average absences	859	0.82	-0.19 (0.20)	-0.33 (0.21)	-0.11 (0.22)	0.12 (0.36)	-0.21 (0.22)	-0.25 (0.21)	0.71
Monthly visit rate	938	0.83	0.031* (0.019)	0.014 (0.021)	0.032 (0.020)	-0.020 (0.024)	0.044** (0.021)	0.020 (0.020)	0.09*
Average visits	938	44.3	1.24 (1.15)	-1.23 (1.26)	0.041 (1.17)	-1.57 (1.32)	-0.83 (1.20)	0.60 (1.16)	0.24
Total Reports	1012	7.32	0.17 (0.29)	0.59 (0.44)	0.23 (0.44)	-0.16 (0.44)	-0.03 (0.47)	0.96** (0.41)	0.04**
Score variable	1012	9.71	0.052 (0.54)	0.55 (0.54)	0.74 (0.52)	0.55 (0.55)	0.21 (0.62)	0.73 (0.50)	0.61
Total Activity Days	1012	324.6	0.95 (8.07)	9.37 (8.06)	11.5 (7.82)	8.88 (8.25)	3.64 (9.37)	10.8 (7.64)	0.60
Mark in pre and post-test	932	12.4	-0.90 (0.61)	-0.91 (0.63)	-0.090 (0.60)	-0.67 (0.62)	0.022 (0.64)	0.35 (0.54)	0.24
Supervisor Reports	934	4.00	-0.078 (0.091)	-0.079 (0.11)	-0.032 (0.10)	-0.079 (0.088)	-0.14 (0.093)	0.010 (0.091)	0.66
Inactivity Dummy	1012	0.18	0.052 (0.044)	0.056 (0.048)	0.022 (0.045)	0.015 (0.046)	0.0067 (0.046)	-0.0027 (0.041)	0.80
Drop-out Dummy	1012	0.18	0.028 (0.042)	-0.012 (0.044)	-0.040 (0.041)	-0.0037 (0.044)	-0.013 (0.044)	-0.057** (0.038)	0.45
Active Now Dummy	1012	0.83	-0.063 (0.043)	-0.059 (0.047)	0.012 (0.042)	-0.018 (0.045)	-0.0092 (0.045)	0.016 (0.040)	0.45

A.2. FIGURES

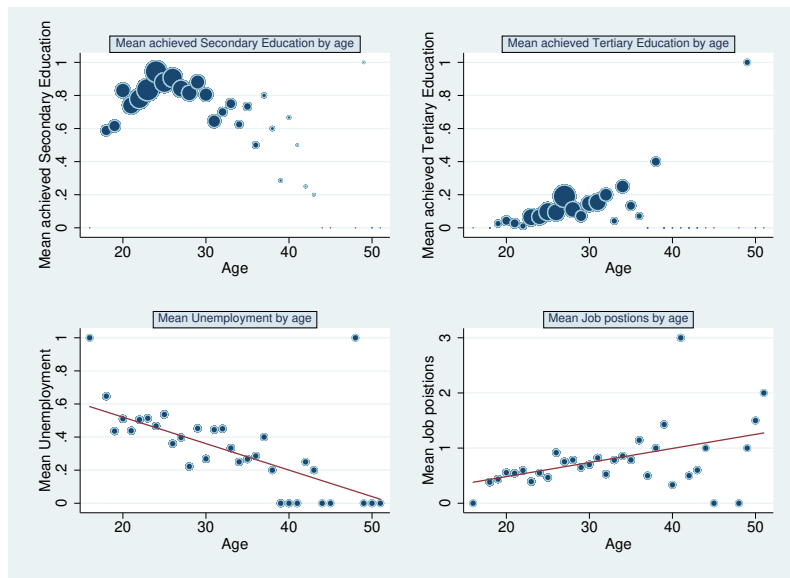


Figure A.1 – Average Achieved Tertiary, Secondary Education by age; Average Unemployment and job positions by age

A.3. REGRESSIONS

Table A.4 – Socio-demographics OLS Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Score variable	Total Activity Days	Mark in pre and post-test	Supervisor Reports	Report Rate	Average absences	Monthly visit rate	Average visits	Total Reports
Age	0.355* (0.176)	3.214* (2.646)	-0.190 (0.216)	0.0108 (0.0310)	-0.00564 (0.0119)	-0.0742 (0.0717)	0.0126 (0.00685)	0.173 (0.400)	-0.0632 (0.152)
Age Squared	-0.00526 (0.00263)	-0.0771 (0.0425)	0.00333 (0.00354)	0.0000707 (0.000487)	0.000184 (0.000193)	0.00100 (0.00118)	-0.000124 (0.000108)	0.00342 (0.00651)	0.00220 (0.00248)
Marital Status (Single)	0.489 (0.559)	7.175 (8.448)	0.330 (0.650)	0.0364 (0.0666)	-0.0157 (0.0353)	0.181 (0.179)	0.0263 (0.0203)	2.670* (1.260)	0.00597 (0.446)
Sex (Female)	-0.0958 (0.312)	-1.671 (4.708)	-0.940* (0.366)	-0.0906 (0.0521)	-0.0781*** (0.0208)	-0.388* (0.151)	-0.00387 (0.0114)	-1.345* (0.676)	-0.831** (0.259)
Education Level	-0.172 (0.105)	-2.596 (1.593)	0.217 (0.126)	0.0230 (0.0158)	0.00329 (0.00692)	0.0301 (0.0343)	-0.00117 (0.00367)	-0.133 (0.222)	-0.0106 (0.0872)
Being a student during the academic year 2016/2017	0.0606 (0.297)	0.766 (4.483)	0.442 (0.355)	-0.0320 (0.0477)	-0.00537 (0.0208)	-0.135 (0.127)	0.0191 (0.0118)	0.724 (0.698)	0.00282 (0.259)
Mother Education	-0.0416 (0.0362)	-0.631 (0.546)	0.0194 (0.0402)	-0.00301 (0.00568)	0.000507 (0.00235)	0.0117 (0.0158)	0.000951 (0.00129)	0.0577 (0.0739)	-0.00585 (0.0295)
Father Education	0.00882 (0.0289)	0.118 (0.436)	-0.0335 (0.0346)	0.00446 (0.00472)	-0.00237 (0.00195)	-0.0130 (0.0145)	-0.000255 (0.00108)	-0.00524 (0.0640)	-0.0266 (0.0245)
Dummy for any leadership position	-0.309 (0.322)	-4.974 (4.858)	-0.242 (0.381)	0.0221 (0.0497)	-0.0242 (0.0219)	-0.185 (0.151)	0.0141 (0.0114)	2.032** (0.676)	-0.370 (0.274)
Employment Status: Unemployed	-1.255*** (0.316)	-18.98*** (4.771)	-0.728 (0.376)	-0.0748 (0.0520)	-0.0486* (0.0223)	-0.212 (0.126)	-0.0331** (0.0126)	-1.427 (0.736)	-0.684* (0.278)
Owning a small retailing business	-0.880* (0.395)	-13.38* (5.943)	-0.517 (0.470)	-0.00451 (0.0542)	-0.0492 (0.0264)	0.670* (0.291)	0.00372 (0.0136)	-0.444 (0.887)	-0.763* (0.332)
Asset Index=2	-0.443 (0.367)	-6.669 (5.533)	-0.778 (0.456)	-0.108 (0.0625)	-0.0144 (0.0264)	-0.207 (0.208)	-0.0549*** (0.0151)	-0.933 (0.895)	-0.339 (0.332)
Asset Index=3	-0.928* (0.417)	-13.88* (6.277)	-1.068* (0.481)	-0.143* (0.0709)	-0.0624* (0.0281)	-0.0810 (0.226)	-0.0537*** (0.0150)	-1.932* (0.935)	-0.842* (0.352)
Asset Index=4	-0.772* (0.392)	-12.00* (5.902)	-1.450** (0.466)	-0.120 (0.0642)	-0.0902** (0.0289)	0.0132 (0.227)	-0.0483*** (0.0143)	-1.493 (0.908)	-1.119** (0.358)
Observations	1010	1010	930	932	1010	857	936	936	1010
R ²	0.045	0.046	0.030	0.271	0.051	0.046	0.073	0.070	0.049
F	2.327	2.409	1.592	10.17	2.890	1.309	3.601	3.703	2.787

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.5 – Social Relations OLS Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Score variable	Total Activity Days	Mark in pre and post-test	Supervisor Reports	Report Rate	Average absences	Monthly visit rate	Average visits	Total Reports
Volunteer in the family	-0.749 (0.386)	-11.11 (5.807)	-0.910* (0.463)	-0.104* (0.0494)	0.00659 (0.0256)	0.0122 (0.164)	-0.0141 (0.0136)	-1.301 (0.836)	-0.0854 (0.323)
Number of activities	-0.154 (0.118)	-2.183 (1.769)	0.0271 (0.140)	-0.00245 (0.0178)	-0.0122 (0.00816)	0.0724 (0.0709)	-0.00431 (0.00442)	-0.182 (0.272)	-0.171 (0.103)
Number of appointments	-0.0610 (0.189)	-1.111 (2.854)	-0.0602 (0.227)	0.0379 (0.0227)	0.00393 (0.0126)	-0.00552 (0.0875)	-0.00549 (0.00653)	0.319 (0.398)	-0.0272 (0.158)
Appointment Dummy	0.202 (0.839)	2.694 (12.59)	0.191 (0.812)	-0.119 (0.123)	-0.00508 (0.0515)	0.506 (0.306)	-0.000484 (0.0281)	0.990 (1.706)	0.0360 (0.647)
Social participation Dummy	1.245* (0.560)	18.91* (8.470)	-0.191 (0.616)	0.0645 (0.0816)	0.0891* (0.0365)	-0.104 (0.197)	0.0374 (0.0225)	1.396 (1.272)	1.256** (0.452)
Age	0.361* (0.177)	5.300* (2.655)	-0.176 (0.216)	0.0144 (0.0311)	-0.00356 (0.0120)	-0.0699 (0.0743)	0.0132 (0.00692)	0.248 (0.397)	-0.0390 (0.153)
Age Squared	-0.00542 (0.00285)	-0.0795 (0.0428)	0.00298 (0.00355)	-0.000105 (0.000488)	0.000144 (0.000195)	0.000880 (0.00123)	-0.000132 (0.000109)	0.00202 (0.00645)	0.00175 (0.00251)
Marital Status (Single)	0.401 (0.559)	5.869 (8.463)	0.344 (0.648)	0.0467 (0.0658)	-0.0168 (0.0356)	0.167 (0.182)	0.0223 (0.0205)	2.492 (1.275)	-0.0373 (0.448)
Sex (Female)	-0.0494 (0.322)	-0.948 (4.858)	-0.891* (0.377)	-0.0702 (0.0533)	-0.0749*** (0.0211)	-0.336* (0.135)	-0.00278 (0.0117)	-1.099 (0.695)	-0.797** (0.263)
Education Level	-0.171 (0.107)	-2.579 (1.622)	0.207 (0.128)	0.0195 (0.0156)	0.00142 (0.00703)	0.0148 (0.0360)	-0.000960 (0.00377)	-0.195 (0.223)	-0.0297 (0.0884)
Dummy for any leadership position	-0.365 (0.434)	-5.533 (6.539)	-0.246 (0.529)	-0.0481 (0.0632)	-0.0401 (0.0304)	-0.314 (0.201)	0.0193 (0.0157)	1.078 (0.957)	-0.460 (0.377)
Employment Status: Unemployed	-1.273*** (0.315)	-19.27*** (4.747)	-0.732 (0.381)	-0.0639 (0.0525)	-0.0477* (0.0224)	-0.188 (0.130)	-0.0315* (0.0127)	-1.220 (0.744)	-0.683* (0.279)
Observations	1006	1006	927	929	1006	854	933	933	1006
R ²	0.060	0.061	0.040	0.280	0.063	0.053	0.083	0.078	0.063
F	2.272	2.344	1.595	9.808	2.461	1.126	2.833	2.963	2.508

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Table A.6 – Motivation OLS Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Score variable	Total Activity Days	Mark in pre and post-test	Supervisor Reports	Report Rate	Average absences	Monthly visit rate	Average visits	Total Reports
Willingness to have a positive pro-social impact	-0.0799 (0.0724)	-1.168 (1.088)	0.00438 (0.0807)	-0.00430 (0.0122)	-0.00193 (0.00454)	-0.0456 (0.0359)	0.000461 (0.00248)	-0.163 (0.141)	-0.0238 (0.0588)
Affective involvement with beneficiaries	0.128 (0.283)	1.706 (4.238)	-0.110 (0.275)	0.0335 (0.0617)	-0.0107 (0.0164)	-0.156 (0.136)	-0.00660 (0.00894)	-0.560 (0.541)	-0.0721 (0.216)
Extrinsic Motivation	0.0882** (0.0329)	1.365** (0.495)	-0.00834 (0.0360)	0.00585 (0.00499)	0.00657** (0.00214)	-0.0326 (0.0196)	0.00209* (0.00103)	0.153* (0.0655)	0.9927*** (0.0266)
Perceived negative social impact	0.0562 (0.0766)	0.778 (1.152)	-0.0149 (0.0902)	-0.0404*** (0.0120)	-0.000663 (0.00576)	0.000572 (0.0314)	-0.00104 (0.00301)	-0.0195 (0.173)	0.00141 (0.0717)
Perceived pro-social impact	0.196 (0.174)	2.957 (2.614)	0.137 (0.211)	-0.0212 (0.0276)	0.0138 (0.0122)	0.165** (0.0548)	-0.000801 (0.00631)	0.0593 (0.379)	0.105 (0.150)
Perceived Social Impact	-0.0818 (0.163)	-1.256 (2.453)	0.126 (0.202)	0.0269 (0.0264)	-0.00270 (0.0111)	0.117 (0.0702)	0.00531 (0.00677)	0.505 (0.373)	-0.0334 (0.139)
Pro-social Motivation(based on pleasure)	0.0332 (0.0723)	0.484 (1.087)	-0.0121 (0.0881)	-0.0189 (0.0130)	-0.00129 (0.00492)	0.0560 (0.0295)	0.00102 (0.00279)	0.0716 (0.163)	-0.00860 (0.0613)
Perception of the significance of the task	0.173 (0.118)	2.639 (1.780)	0.101 (0.126)	0.00317 (0.0170)	0.00432 (0.00763)	0.0295 (0.0499)	0.000249 (0.00400)	-0.0100 (0.243)	0.0904 (0.0951)
Perceived Social Value	-0.0778 (0.204)	-1.221 (3.117)	-0.0533 (0.229)	0.00503 (0.0260)	-0.0115 (0.0126)	-0.0429 (0.0813)	-0.00310 (0.00713)	0.205 (0.425)	-0.150 (0.157)
Age	0.341 (0.175)	5.005 (2.639)	-0.222 (0.217)	0.00152 (0.0317)	-0.00536 (0.0120)	-0.0830 (0.0708)	0.0127 (0.00680)	0.179 (0.402)	-0.0589 (0.153)
Age Squared	-0.00502 (0.00282)	-0.0735 (0.0425)	0.00386 (0.00355)	0.000224 (0.000499)	0.000183 (0.000195)	0.00113 (0.00118)	-0.000122 (0.000107)	0.00333 (0.00655)	0.00218 (0.00250)
Marital Status (Single)	0.489 (0.557)	7.192 (8.405)	0.331 (0.653)	0.0467 (0.0660)	-0.0144 (0.0354)	0.150 (0.179)	0.0275 (0.0201)	2.768* (1.248)	0.0279 (0.446)
Sex (Female)	-0.227 (0.316)	-3.631 (4.762)	-0.938* (0.373)	-0.0955 (0.0538)	-0.0825*** (0.0208)	-0.357* (0.152)	-0.00381 (0.0115)	-1.368* (0.686)	-0.913*** (0.260)
Education Level	-0.152 (0.106)	-2.288 (1.609)	0.240 (0.128)	0.0255 (0.0165)	0.00435 (0.00706)	0.0415 (0.0351)	-0.00132 (0.00369)	-0.139 (0.225)	0.00117 (0.0886)
Dummy for any leadership position	-0.423 (0.331)	-6.711 (4.984)	-0.294 (0.387)	0.0156 (0.0496)	-0.0278 (0.0221)	-0.212 (0.157)	0.0128 (0.0114)	1.976** (0.677)	-0.437 (0.276)
Employment Status: Unemployed	-1.222*** (0.315)	-18.47*** (4.750)	-0.735 (0.381)	-0.0765 (0.0508)	-0.0458* (0.0222)	-0.254 (0.130)	-0.0314* (0.0126)	-1.335 (0.740)	-0.642* (0.276)
Observations	1010	1010	930	932	1010	857	936	936	1010
R ²	0.066	0.068	0.034	0.285	0.066	0.065	0.080	0.081	0.068
F	2.302	2.383	1.298	9.388	2.643	1.126	2.901	3.150	2.720

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Table A.7 – Ethnicity OLS Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Score variable	Total Activity Days	Mark in pre and post-test	Supervisor Reports	Report Rate	Average absences	Monthly visit rate	Total Reports
Age	0.356* (0.177)	5.220* (2.655)	-0.195 (0.215)	0.00990 (0.0309)	-0.00581 (0.0120)	-0.0696 (0.0722)	0.0117 (0.00682)	-0.0622 (0.153)
Age Squared	-0.00528 (0.00284)	-0.0772 (0.0427)	0.00347 (0.00353)	0.0000916 (0.000486)	0.000184 (0.000195)	0.000985 (0.00118)	-0.000111 (0.000108)	0.00216 (0.00249)
Marital Status (Single)	0.480 (0.560)	6.974 (8.476)	0.370 (0.651)	0.0407 (0.0682)	-0.0136 (0.0353)	0.195 (0.184)	0.0271 (0.0201)	0.0244 (0.448)
Sex (Female)	-0.120 (0.318)	-2.044 (4.793)	-0.970** (0.367)	-0.0934 (0.0527)	-0.0753*** (0.0208)	-0.422** (0.163)	-0.00279 (0.0114)	-0.802** (0.260)
Education Level	-0.177 (0.106)	-2.667 (1.602)	0.209 (0.127)	0.0219 (0.0159)	0.00416 (0.00691)	0.0244 (0.0355)	-0.000650 (0.00368)	-0.00235 (0.0874)
Dummy for any leadership position	-0.309 (0.325)	-4.989 (4.900)	-0.165 (0.380)	0.0282 (0.0504)	-0.0232 (0.0220)	-0.182 (0.151)	0.0139 (0.0115)	-0.362 (0.275)
Employment Status: Unemployed	-1.275*** (0.317)	-19.29*** (4.770)	-0.752* (0.379)	-0.0744 (0.0510)	-0.0485* (0.0225)	-0.230 (0.125)	-0.0313* (0.0127)	-0.688* (0.280)
Fula	0.513 (0.701)	8.623 (10.62)	-0.265 (0.882)	-0.00595 (0.106)	-0.00645 (0.0521)	0.766 (0.448)	-0.0111 (0.0364)	-0.0233 (0.643)
Mancanha	0.0806 (0.651)	1.637 (9.799)	0.0176 (0.666)	0.0119 (0.0873)	0.00523 (0.0390)	-0.143 (0.228)	0.0320 (0.0216)	-0.0365 (0.488)
Mandinga	0.193 (0.681)	4.095 (10.30)	-0.701 (0.868)	-0.0986 (0.112)	0.0424 (0.0480)	0.239 (0.338)	0.0136 (0.0333)	0.439 (0.603)
Papéis	-0.230 (0.531)	-3.391 (7.965)	-1.010 (0.617)	-0.0522 (0.0821)	-0.00645 (0.0347)	-0.211 (0.210)	0.0221 (0.0183)	-0.0662 (0.436)
Manjacos	0.679 (0.529)	10.51 (7.985)	-0.295 (0.620)	-0.0239 (0.0982)	0.00359 (0.0354)	-0.0714 (0.220)	0.0165 (0.0192)	0.138 (0.443)
Other	0.430 (0.591)	6.204 (8.923)	0.405 (0.666)	0.00299 (0.0901)	0.0683 (0.0384)	0.0872 (0.273)	0.0192 (0.0253)	0.790 (0.486)
Observations	1009	1009	929	931	1009	856	935	1009
R ²	0.049	0.050	0.038	0.273	0.058	0.056	0.078	0.055
F	1.967	2.034	1.503	9.470	2.561	1.147	2.872	2.413

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.8 – Socio-demographics, Social Relations Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)
	Inactivity Dummy		Drop-out Dummy		Active Now Dummy	
Age	-0.0904 (0.0675)	-0.0944 (0.0708)	-0.0956 (0.0702)	-0.0951 (0.0741)	0.0943 (0.0671)	0.0997 (0.0699)
Age Squared	0.00125 (0.00116)	0.00132 (0.00122)	0.00124 (0.00121)	0.00123 (0.00129)	-0.00134 (0.00115)	-0.00145 (0.00121)
Marital Status (Single)	-0.174 (0.181)	-0.147 (0.185)	-0.272 (0.188)	-0.248 (0.192)	0.117 (0.185)	0.0906 (0.188)
Sex (Female)	0.159 (0.0977)	0.151 (0.101)	0.0263 (0.103)	0.0244 (0.108)	-0.0840 (0.0987)	-0.0671 (0.102)
Education Level	0.0860* (0.0354)	0.0892* (0.0364)	0.0879* (0.0374)	0.0881* (0.0384)	-0.0753* (0.0357)	-0.0790* (0.0366)
Dummy for any leadership position	0.0407 (0.101)	0.00438 (0.142)	0.0715 (0.107)	0.0822 (0.146)	0.00790 (0.103)	-0.0232 (0.146)
Employment Status: Unemployed	0.452*** (0.103)	0.483*** (0.106)	0.488*** (0.110)	0.515*** (0.113)	-0.387*** (0.104)	-0.408*** (0.106)
Owning a small retailing business	0.335* (0.132)	0.353** (0.133)	0.360* (0.140)	0.370** (0.140)	-0.296* (0.134)	-0.309* (0.134)
Asset Index=2	0.184 (0.131)	0.191 (0.133)	0.182 (0.141)	0.172 (0.142)	-0.130 (0.132)	-0.133 (0.134)
Asset Index=3	0.247 (0.132)	0.274* (0.134)	0.351* (0.138)	0.374** (0.141)	-0.233 (0.132)	-0.257 (0.135)
Asset Index=4	0.292* (0.132)	0.349** (0.132)	0.332* (0.138)	0.371** (0.139)	-0.246 (0.133)	-0.298* (0.133)
Volunteer in the family		0.194 (0.116)		0.195 (0.122)		-0.221 (0.117)
Number of activities		0.0690 (0.0398)		0.0610 (0.0417)		-0.0629 (0.0405)
Number of appointments		0.0447 (0.0588)		0.00188 (0.0627)		-0.00691 (0.0606)
Appointment Dummy		-0.102 (0.252)		-0.0537 (0.255)		0.0665 (0.249)
Social participation Dummy		-0.483** (0.163)		-0.438* (0.172)		0.474** (0.164)
Volunteer		0.139 (0.238)		0.0574 (0.241)		-0.121 (0.236)
Talks with leaders(7 days)		-0.0931 (0.0594)		-0.0340 (0.0626)		0.104 (0.0602)
Talking with leader dummy		-0.0284 (0.175)		-0.0427 (0.187)		-0.0526 (0.177)
Observations	1010	1006	1010	1006	1010	1006
Pseudo R ²	0.045	0.064	0.050	0.063	0.036	0.053
LR chi2	50.638	69.238	49.576	60.136	38.904	56.324
Prob > chi2	0.000	0.000	0.000	0.001	0.010	0.002

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.9 – Motivation, Ethnicity Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)
	Inactivity Dummy		Drop-out Dummy		Active Now Dummy	
main						
Willingness to have a positive pro-social impact	0.0226 (0.0215)		0.0375 (0.0232)		-0.0226 (0.0217)	
Affective involvement with beneficiaries	0.0794 (0.0805)		0.0164 (0.0797)		-0.0785 (0.0819)	
Extrinsic Motivation	-0.0222* (0.00979)		-0.0242* (0.0104)		0.0236* (0.00978)	
Perceived negative social impact	0.00431 (0.0267)		-0.00682 (0.0283)		-0.00361 (0.0268)	
Perceived pro-social impact	-0.0709 (0.0530)		-0.0276 (0.0550)		0.0606 (0.0541)	
Perceived Social Impact	-0.0627 (0.0508)		-0.0526 (0.0531)		0.0619 (0.0512)	
Pro-social Motivation(based on pleasure)	0.0119 (0.0230)		0.00654 (0.0245)		-0.0113 (0.0233)	
Perception of the significance of the task	-0.0480 (0.0347)		-0.0513 (0.0361)		0.0526 (0.0353)	
Perceived Social Value	0.0312 (0.0574)		0.0202 (0.0602)		-0.0230 (0.0577)	
Age	-0.0834 (0.0677)	-0.0920 (0.0667)	-0.0934 (0.0707)	-0.101 (0.0695)	0.0875 (0.0673)	0.0964 (0.0661)
Age Squared	0.00113 (0.00116)	0.00125 (0.00114)	0.00121 (0.00122)	0.00132 (0.00120)	-0.00122 (0.00115)	-0.00134 (0.00113)
Marital Status (Single)	-0.197 (0.187)	-0.171 (0.181)	-0.292 (0.192)	-0.272 (0.190)	0.138 (0.190)	0.111 (0.185)
Sex (Female)	0.184 (0.101)	0.168 (0.0976)	0.0673 (0.107)	0.0306 (0.103)	-0.112 (0.102)	-0.0968 (0.0986)
Education Level	0.0762* (0.0361)	0.0876* (0.0353)	0.0800* (0.0384)	0.0884* (0.0374)	-0.0646 (0.0364)	-0.0772* (0.0357)
Dummy for any leadership position	0.0809 (0.103)	0.0274 (0.102)	0.116 (0.109)	0.0635 (0.107)	-0.0346 (0.105)	0.0216 (0.103)
Employment Status: Unemployed	0.457*** (0.104)	0.467*** (0.104)	0.487*** (0.111)	0.507*** (0.111)	-0.386*** (0.105)	-0.405*** (0.105)
Fula		0.130 (0.242)		0.0491 (0.252)		-0.0874 (0.246)
Mancanha		0.139 (0.187)		0.103 (0.192)		-0.133 (0.188)
Mandinga		0.380 (0.235)		0.0930 (0.252)		-0.315 (0.239)
Papéis		0.309 (0.159)		0.235 (0.161)		-0.337* (0.159)
Manjacos		0.128 (0.171)		-0.0969 (0.181)		0.00683 (0.178)
Other		0.123 (0.187)		-0.128 (0.204)		-0.0234 (0.192)
Observations	1010	1009	1010	1009	1010	1009
Pseudo R ²	0.065	0.051	0.066	0.057	0.058	0.044
LR chi2	71.103	57.176	64.512	57.752	60.210	48.176
Prob > chi2	0.000	0.001	0.000	0.001	0.001	0.007

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$