Healthcare Delivery in Sierra Leone
Analysis Plan*

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1 Introduction

Over the past decade, the Government of Sierra Leone (GoSL) has made a concerted effort to improve health care services throughout the country, including an ambitious free health care initiative launched in 2010. Key to the success of the initiative was strengthening the weak incentives faced by front-line health providers—for example, in early 2010, a large share of health staff were compensated entirely through informal fee payments from users and margins from drug sales. To alleviate basic resource constraints, the GoSL increased worker salaries and the flow of resources to clinics nationwide, and sought to introduce non-financial incentive schemes, which recent studies have shown to be highly effective in improving worker performance in a range of environments (Björkman & Svensson 2010, Kosfeld & Neckermann 2011, Ashraf *et al.* 2011). However, could such schemes be applied to Sierra Leone's health sector, and if so, what types of non-financial incentives would work best?

To answer this question, the GoSL, in conjunction with the World Bank, the Center for the Study of African Economies, and Innovations for Poverty Action, launched a randomized controlled trial to test the effectiveness of two innovative interventions using non-financial incentives to improve health care outcomes. The first intervention involved community monitoring of health clinics through the use of health scorecards and collaborative meetings between community members and health staff. The second intervention used non-financial awards, such as public commendations, with the aim of improving worker motivation and promoting greater efficiency within health clinics. This document is an analysis plan for gauging the effects of these interventions, and builds on an initial report released by Innovations for Poverty Action in 2014.

2 Intervention

In order to improve the enactment of the free health care initiative, the GoSL implemented two innovative interventions that use community monitoring and non-financial awards to influence health outcomes. The interventions have been designed and implemented by the GoSL's Decentralization Secretariat (DecSec), and three local health care NGOs - the International Rescue Committee, Concern Worldwide and Plan International. The Ministry of Health was a partner in the intervention. The program has been funded by the World Bank's Decentralized Service Delivery Program (DSDP).

2.1 Competition for Non-financial Awards

The first intervention, involving non-financial awards, facilitates yardstick competition among groups of maternal and child health clinics, and rewards workers at both the best performing and the most improved facilities. At baseline, a relative ranking of clinics by district on key measures of performance, such as worker absenteeism, staff attitude and charging of illegal fees, and utilization for maternal and child health services was calculated, but not publicized (so as not to discourage the participation of lower ranked clinics).

The competition, entitled "Respect Pass Money," was advertised through district-wide clinic meetings, posters on clinics and through individual meetings at clinics held by trained facilitators from partnering NGOs. Facilitators discussed clinic performance and the competition with clinic staff; however, the indicators used to produce clinic rankings were not revealed to clinics or the public, in order to prevent 'teaching to the test.' Clinics were revisited three times throughout the course of the 9-month competition in order to sustain interest in the competition and at the end of the nine months, an audit of reported clinic results was conducted, and any clinic found to be misrepresenting information were disqualified. At endline, those clinics (i) which performed best in absolute terms on these indicators, and (ii) which showed the greatest improvement over the course of the intervention, were declared winners and received non-financial awards. Specifically, staff at winning clinics received letters of commendation from high-ranking politicians, and an award at a public ceremony.

2.2   Community Monitoring

The second intervention builds upon evidence from the recent community monitoring initiative in Uganda. A 'bottom-up' community monitoring intervention introduced health scorecards that provide information regarding the state of health care in each community, and facilitated interface meetings between community members and health facility staff. Prior to the meetings, communities were surveyed on their perception of service provision by the local clinic, and focus groups held to discuss the state of health care in the community.

During the interface meetings, information about the state of health care was disseminated via a community scorecard and mutual commitments made to improve services through a joint action plan addressing such areas as staff absenteeism, maternal mortality and vaccination rates. Additional meetings were held one month, three months and nine months after the initial meeting to review the joint action plan and progress made since the previous meeting. This framework aimed to ensure participatory decision-making and hold both health care workers and the community mutually accountable, fostering increased access to and utilization of maternal and child health services.

3   Evaluation Overview

3.1   Experimental Methodology

The evaluation employed a randomized, controlled field experiment to assess the causal impact of the interventions. Randomized control trials are widely considered to be the most rigorous and accurate method for quantifying the impacts of a program. Clinics and their catchment area were randomly selected to participate in one of the interventions (they constitute the "treatment group") or to act as control. Within each clinic catchment, two communities were randomly selected, and households were randomly sampled from within these communities. This methodology ensures that observed and unobserved characteristics likely to affect health outcomes and clinics effectiveness are similarly distributed across treatment and control groups before the intervention. Consequently, any difference in indicators of interest between treatment and control groups observed after the intervention can be interpreted as the effect of the intervention itself.

3.2   Sampling Method

Two hundred and fifty-four health clinics in 4 districts of Sierra Leone were selected to participate in the evaluation. Using a non-bipartite matching algorithm created specifically for this project, the clinics within the sample were split into triplets based on similar utilization and performance characteristics gathered during baseline data collection. Clinics were then randomly assigned within these triplets to participate in either the community monitoring intervention, the non-financial awards intervention or act as a control, so that each group comprises a third of the clinics. In total, the sample consisted in 254 MCHP and CHP health clinics, 508 communities (two villages are selected in each clinic's catchment) and 10 households per communities, or 5,080 households in total.

3.3   Surveys

Baseline data collection was performed in September 2011. The endline surveys were conducted in May and June of 2013. Four types of survey were administered – a clinic survey, community survey, household survey and user-feedback survey. The surveys were conducted as follows:

1. User-Feedback Survey - At baseline, fifteen randomly sampled individuals in two villages (within 2 miles of the clinic) were administered a user-feedback questionnaire to collect information on recent health episodes, and feedback on service provision and satisfaction.

2. Clinic/Peripheral Health Units {phu} Survey - All clinics participating in the evaluation were surveyed to assess clinic services, resources and staffing, and underwent an audit of drug stocks and registers. Most survey sections and questions in baseline and endline overlap, though there are a few baseline or endline only sections, and some questions differ slightly between survey waves.

3. Community Survey - A community survey was administered to leaders in each of the 508 target villages. The questionnaire inquired into their communities' remoteness, public health status, and any on-going government and NGO projects. Most survey sections and questions in baseline and endline overlap, though there are a few baseline or endline only sections, and some questions differ slightly between survey waves.

4. Household Survey - All the households surveyed in the National Public Services survey (NPS) 2008 (five per community) were included in the sample. For the collection of endline household data, the initial household survey sample and the user-feedback survey sample were combined. The full baseline household survey sample was re-interviewed (that is, 5 households per community and 10 per target clinic), while a third of the initial user-feedback survey sample (that is, 5 households out of 15 per community and 10 out of 30 per target clinic) were randomly selected to be administered the household survey. As a consequence, the endline household survey sample is twice as big as the baseline sample. At the individual level, unique identifiers at baseline and endline are not matched. It is therefore impossible to merge the baseline and end line rounds at the individual level. The endline household survey was shortened: not all variables present in the baseline survey are present in the endline survey.

3.4 Reduced Form Econometric Specifications:

3.4.1 Treatment Effects

Household and individual level main specifications: For household and individual level outcomes we will estimate a repeated cross-section type ANCOVA model. This is due to the fact that most of our key health outcomes come from households who have experienced at least one of four types of health episodes: vaccination, antenatal or postnatal care, childbirth, and illness or injury. Since health episodes are sporadic, the specific households in our sample who experienced health episodes in the baseline are typically not the same households that experienced episodes in the endline. Restricting our sample to only those households that experienced health episodes in both rounds would (a) over-represent high morbidity households, and (b) reduce our observations to a fraction of the sample. Therefore, for our primary specification we use an ANCOVA specification, controlling for the average baseline value (rather than each individual baseline observation):

$$y_{icmE} = \alpha + \beta_1 T_{icm}^{CM} + \beta_2 T_{icm}^{NFA} + \beta_3 Y_{icmB} + \tau_m + \varepsilon_{icm} \tag{1}$$

where y_{icmE} is the outcome of household or individual i , in clinic catchment c, in matching triplet m, at endline ($t = E$). T_{icm}^{CM} and T_{icm}^{NFA} are indicator variables for assignment to community monitoring (CM) and non-financial awards (NFA) treatment conditions, equal to 1 if the household is assigned to treatment, and 0 otherwise. Average community-level baseline ($t = B$) values of the outcome variable Y_{icmB} are captured by β_3, and are calculated including the user-feedback for those variables for which user feedback data was collected. This model includes triplet fixed effects, τ_m, to account for differences based on utilization and performance characteristic described in section 3.2. ε_{icm} is an idiosyncratic error term. Since randomization took place at the clinic level, standard errors will be clustered at the level of the clinic catchment.

When baseline variables are not available, we will estimate the following basic cross-sectional specification:

$$y_{icmE} = \alpha + \beta_1 T_{icm}^{CM} + \beta_1 T_{icm}^{NFA} + \tau_m + \varepsilon_{icm} \tag{2}$$

where indexing is the same as in Equation 1, except all observations are observed at endline only.

Household, and individual level robustness checks: As a robustness check we will run the following difference in difference model for all household, individual, and episode level outcomes:

$$y_{icmt} = \alpha + \beta_1 T_{icm}^{CM} + \beta_2 T_{icm}^{NFA} + \beta_3 EL_t + \beta_4 (T_{icm}^{CM} \times EL_t) + \beta_5 (T_{icm}^{NFA} \times EL_t) + \tau_m + \varepsilon_{icmt} \tag{3}$$

where y_{icmt} is the outcome of household, individual, or episode i, in clinic catchment c, in matching triplet m, at time t. T_{icm}^{CM} and T_{icm}^{NFA} are again dichotomous indicators for treatment. ET_t is a dummy variable

equal to 1 if the observation occurs at endline, and 0 otherwise. The coefficients β_4 and β_5 on the interaction between the treatment and endline dummies capture the causal effect of the community monitoring and non-financial award interventions, respectively. ε_{icmt} is an idiosyncratic error term. As in Equation 1, we include triplet fixed effects τ_m, and cluster standard errors at the clinic catchment level.

As additional robustness checks, we will run the models estimated using Equations 1-4 including enumerator fixed effects. For health episodes, we will account for whether the survey respondent (compared to other HH members) was the one who experienced the health event, when possible.

Clinic and community level outcomes: For all clinic and community level outcomes we have panel data, and thus use an ANCOVA model, controlling for baseline values of the outcome variable to improve statistical power (McKenzie 2012):

$$y_{icmE} = \alpha + \beta_1 T_{icm}^{CM} + \beta_2 T_{icm}^{NFA} + \beta_3 y_{icmB} + \tau_m + \varepsilon_{icm} \tag{4}$$

where y_{icmE} is the outcome of household clinic or community i, in clinic catchment c, in matching triplet m, at endline t_1. T_{icm}^{CM} and T_{icm}^{NFA} again represent treatment indicators, with β_1 and β_2 estimating the causal effect of treatment conditions. Baseline values of the outcome variable y_{icmB} are captured by β_3. For community level variables, standard errors will be clustered at the clinic catchment level. Given multiple waves of clinic data, standard errors will be clustered at the clinic level.

3.4.2   Multiple Inference Correction

In addition to standard p-values, we will also report q-values that control the proportion of incorrectly rejected null hypotheses across families of outcomes (Anderson 2008). Specifically, we control for the false discovery rate (FDR) within treatment arm, 1) across specific primary families, and 2) within primary families, across main outcomes. When multiple specifications are estimated for the same outcome, corrections will be made within not across specifications. No corrections are made across non-primary families, or among variables other than the main outcomes within primary families.

3.4.3   Dimensions of Heterogeneity

We also wish to analyze how treatment effects vary by sub-group. Heterogeneous treatment effects will be measured by models in the general form:

$$y_i = \alpha + \beta_1 T_i^{CM} + \beta_2 T_i^{NFA} + \beta_3 Het_i + \beta_4 (T_i^{CM} \times Het_i) + \beta_5 (T_i^{NFA} \times Het_i) + \varepsilon_i \tag{5}$$

where Het is the dimension of heterogeneity being examined, captured by β_4 and β_5. Dimensions to be examined include:

1. Gender {i}

2. Health event patient is respondent {i}

3. Equivalized household assets {hh}

4. Illegal fees are unaffordable {hh}

5. Time in minutes to get to nearest clinic {hh}

6. Clinic service provision (operationalized by clinic service provision index) {phu}

7. Health clinic received performance incentive at baseline {phu}

8. Clinic type {phu}

9. Clinic remoteness {com}

3.4.4 Balance Checks

1. We will conduct balance checks for all outcomes/footnoteThis includes both summary indices, and composite variables and dimensions of heterogeneity available at baseline. When a variable is present at endline but not baseline, we will show balance for a proxy variable, if available. Balance checks will be conducted on (i) the full baseline sample, and (ii) the baseline sample that is present in both baseline and endline.

2. Balance tests will also be conducted on the following variables:

   (a) Remoteness (Does a motorable road pass through the village) (Is there mobile phone coverage in this community) {com}

   (b) Clinic access (Total distance and cost to nearest clinic) {com}

   (c) Household size {hh}

   (d) Member of the household gave birth in the last year {hh}

   (e) Trust in community (Community members are: honest/trustworthy, willing to help) {i}

   (f) Believe VDC represents your interests {i}

   (g) Child (under 2) present in household {hh}

   (h) Religion {i}

   (i) Ethnicity {i}

   (j) Highest level of educational attainment {i}

   (k) HH contains village leader/stakeholder (Traditional society head, Paramount chief, HMC member Youth leader, etc) {hh}

   (l) Do you believe what the doctor tells you? {i}

   (m) The illegal fees charged are unaffordable {i}

   (n) VDCs/ HMCs are honest and can be trusted {i}

   (o) Relative community cohesion: (In your opinion, is it generally easier, the same or harder for people in your community to work together on community projects compared to OTHER communities that you know?) {hh}

   (p) Number of illness cases {hh}

3.4.5 Manipulation Checks

To test whether communities assigned to the non-financial awards and community monitoring arms received treatment, the following variables were regressed on treatment assignment following the econometric strategy outlined above.

1. Community monitoring

   (a) Were there any community monitory meetings (by PLAN, Concern, or IRC) last year ? (in the last year) {com}

   (b) How many of these meetings were held? (in the last year) {com}

   (c) Did anyone attending these meetings inform this village about what happened in these meetings? {com}

2. Non-financial awards

   (a) Clinic has heard of clinic competitions for non-financial awards? {phu}

   (b) Clinic is participating in competition for non-financial awards? {phu}

3.5 Outcomes

Our data includes many different outcome variables spanning across the household, community, and clinic datasets. In a preliminary report for the GoSL, we analyzed 9 household level outcomes: immunization, institutional delivery, antenatal care visits, illegal fees, nurse absenteeism, staff attitude, maternal and under-five mortality, utilization, and anthropometric outcomes. We did not examine other outcomes from the household dataset or any outcomes from the clinic or community datasets.

   In the following sections, we list the outcome variables, grouped by family, which we will consider. Non-primary families and outcomes are marked with an asterisk (∗), and are excluded from adjustment for multiple inference testing due to weak a priori hypotheses about them, because they partly overlap with other variables which are included when adjusting for multiple testing, or because they are of lesser interest than other variables. There are ten families of outcomes: 1. Maternal utilization index (maternal episodes), 2. Health service delivery, 3. Clinic quality, 4. Health outcomes, 5. General utilization index, 6. Community health engagement*, 7. Satisfaction*, 8. Water and sanitation*, 9. Collective action*, 10. Economic status*. Square brackets [ ] contain additional information on outcomes, such as the variables contained within an index. Parentheses ( ) indicate time or sample restrictions for the outcome variable. Curly brackets { } indicate the whether an outcome was measured at the individual {i}, household {hh}, village {com}, or clinic {phu} level of analysis. When outcomes are measured at multiple levels of analysis, we will analyze alternative measurements as a robustness check.

3.5.1 Index Construction

For the families of variables above, we will construct control-group normalized standardized indicies (Kling *et al.* 2007). To create an index, we first normalize each outcome relative to the control group: $Y_k^* = \frac{Y_k - \mu_k}{\sigma_k}$, where Y_k is the kth of K outcomes, μ_k is the control group mean, and σ_k is the control group standard deviation. The summary index for a family of outcomes is thus: $Y* = \frac{\sum_k Y_k^*}{K}$. As a robustness check, we will also construct and analyze our families of outcomes using an inverse covariance weighting method (Anderson 2008).

3.5.2 Outcome Variables

1. **Maternal Utilization Index (maternal episodes)**

    (a) Antenatal/postnatal care index [standardized summary index of i-ii] {i}

        i. Number of ANC visits (among mothers who have given birth in the last year)
        ii. Number of PNC visits (among mothers who have given birth in the last year)

    (b) Childbirth in facility {i}

        i. Proportion of pregnant mothers who gave birth in facility (among mothers who have given birth in the last year)

2. **Health Service Delivery**

    (a) Absenteeism (among respondents experiencing health episodes) [standardized summary index of i-ii] {i}

        i. Of all the times that you visited the clinic in the past one month, did you ever find there was no staff present?
        ii. The last time you visited the clinic in the past one month, how long did you wait to see the person who attended to you?

    (b) Fee payments (among all health episodes) {i}

        i. Did you pay any money for products or services during this consultation?
        ii. What is the total estimated value of the items (in cash and in kind) that you gave the person/people who assisted you?

(c) Service delivery (among all health episodes) {i}

    i. In the past one month, have you had any problems with the clinic?

    ii. What were these problems?

        A. Staff not present

        B. Drugs not available

        C. Facility not clean

        D. Unpleasant behaviour from staff

(d) Were medicines in-stock and available at the clinic? (among all health episodes) {i}*

(e) Satisfaction with services {i}*

    i. The last time you visited the clinic in the past one month, how satisfied were you with the care that you received at the clinic?

    ii. The next time you need medical attention for some other reason, would you visit [CLINIC] again?

(f) The last time you visited the clinic in the past one month, how would you rate the attitude of the staff? {i}*

3. **Clinic Quality**

(a) Clinic service provision[standardized summary index of i - vi] {phu}

    i. Facility organization index 2 [standardized summary index of A-R]

        A. (A) Duty Roster for Staff, (B) Numbered cards for patients, (C) Seating Arrangements, (D) Suggestion box, (E) Name tags for staff, (F) Rooms labeled, (G) Floor clean, (H) Walls clean, (I) Area clean/uncluttered, (J) Drug info available, (K) Smells okay, (L) Coverage graphs, (M) Medicines on floor, (N) Medicines organized by date, (O) Drugs stored in safe area, (P) Storage room clean, (Q) Storage room has limited access, (R) Stock cards available

    ii. Proportion of required services provided by clinic (In the past month) [proportion of A-L the clinic is required to provide]

        A. (A) Immunization, (B) Growth monitoring, (C) Treatment of sick children, (D) Antenatal care, (E) Family planning, (F) Treatment of STIs/STDs, (G) Deliveries (enumerator ask anything associated with delivery e.g. soap, incentive for TBAs), (H) HIV / AIDS counseling and testing (I) Health education, (J) Postnatal care, (K) Nutrition supplementation, (L) Pregnancy test

    iii. Frequency of service provision index [standardized summary of the number of days (ii) are provided]

    iv. Proportion of clinics charging for out of stock equipment

    v. Number of clinic workers on duty

    vi. Reported hours clinic is open (per week)

(b) Proportion of clinics that know about the free health-care policy {phu}

(c) Employee satisfaction index [standardized summary index of i-ii]* {phu}

    i. Satisfaction with community support/participation

    ii. Satisfaction with job overall

4. **Health Outcomes**

(a) Proportion of households where at least one child under the age of 5 has died (in the past 6 months) {hh}

(b) Proportion of households where women have died during OR due to complications from pregnancy (in the past 6 months) {hh}

(c) Proportion of households where any household member had an illness {hh}

    i. Was this episode an illness, an injury or other consultation?

(d) Anthropometric outcomes {hh}

    i. Child weight-for-height (Among eligible children. Measured at endline only)

(e) Vaccine completion index: (Among households with eligible children) [standardized summary index of A - G] {hh}

    i. Proportion of children in household completing full cycle of: (A) BCG, (B) OPV, (C) Penta, (D) Measles, (E) Yellow Fever, (F) RVV, (G) PCV

(f) Childbirth episode [standardized summary index of i - ii] {hh}

    i. Did the mother have health problems during or within two months of the delivery?
    ii. Did the baby have health problems during delivery or within one month of birth?

(g) Child illness index [standardized summary index of i - ii] {phu}*

    i. Number of malaria cases (among children under 5)
    ii. Number of diarrhea cases (among children under 5)

5. **General Utilization Index***

(a) Proportion of health episodes in response to which individual visited clinic (among individuals experiencing health episodes) {i}

(b) Use of traditional healers {i}

    i. Proportion of all health episodes in response to which individual visited traditional healer (among individuals experiencing health episodes)
    ii. Which health providers did you visit? (among individuals experiencing health episodes)

6. **Community Health Engagement***

(a) Reported engagement index [standardized summary index of i-iii] {com}

    i. Health monitoring facility (HMF)/clinic monitoring facility (CMF) exists
    ii. Number of HMC/FMC meetings
    iii. Contributions to clinic (e.g. expenditures, nurse veg garden, etc.)

(b) Reported community engagement index (past 6 months)[standardized summary index of ii-vi] {phu}

    i. Has the community helped clean this facility ?
    ii. Has the community helped you with your personal work? E.g. Farm, back garden. . . etc.
    iii. How often have community members helped you with your personal work?
    iv. How often has the facility had disputes/conflicts with the community?

7. **Satisfaction***

(a) How satisfied are you with your family's health? {hh}

(b) How satisfied are you with the performance of public health workers? {hh}

(c) Satisfaction with services {hh}

    i. The last time you visited [CLINIC] in the past one month, how satisfied were you with the care that you received at the clinic?
    ii. The next time you need medical attention for some other reason, would you visit [CLINIC] again?

8. **Water and Sanitation***

(a) Household-level index [standardized summary index of i-ii] {hh}

    i. Water

        A. What is the main source of drinking water for members of your household?

        B. What do you usually do to make the water safer to drink?

        C. What is the main source of water used by your household for other purposes such as cooking and hand washing?

    ii. Toilets

        A. What type of toilet facility do members of your household usually use?

(b) Community-level index [standardized summary index of i-ii] {com}

    i. Water

        A. Is there a water facility in this village/community?

        B. What kind of water facility is it?

        C. Do people from this community usually get water to drink from this water facility?

        D. [If not] Where do people from this community usually get water to drink?

    ii. Toilets

        A. Is there a Communal Waste Disposal site in this village?

        B. Are there any public toilets in your community?

(c) Satisfaction index {hh}

    i. How satisfied are you with the public health and sanitation facilities such as drainage, toilets, garbage bins and access to clean and safe water?

    ii. How satisfied are you with the cleanliness of your community?

    iii. Over the last year how has the quality of public health and sanitation changed?

9. **Collective Action***

(a) Meeting attendance {com}

    i. Community meetings index (in the last 6 months) [standardized summary index of A-B]

        A. Number of Health Management Committee (HMC) meetings (in the last 6 months)

        B. Number of Facility Management Committee (FMC) meetings (in the last 6 months)

(b) Development projects (Excluding NGOs){com}

    i. Has [the Local Council/the Paramount Chief] done any projects that this community (In the past year, starting May 2012)

    ii. Did community members contribute labour, money or local materials for this project (Including work for food and work for pay)?

    iii. Were any community members involved in the planning of this project?

(c) Collective action {com}

    i. Has this community worked together to address any problem facing this community? For each project: (In the past one year since May 2012)

        A. What kind of problem did this community address?

        B. Did the community approach any person or organization outside the community for help in addressing this problem?

        C. Whom did the community first approach regarding this problem?

        D. Is your community satisfied with the way in which the person / organization responded to your problem?

        E. Has this problem now been resolved?

(d) Voting {hh}

  i. Do you have a voter registration card?

  ii. Did you vote in the last Local Council Elections? (November 2012 election)

  iii. Did you vote in the last General Elections? (November 2012 election)

10. **Economic Status***

 (a) Physical asset index: {hh}

  i. How many of the following does this household own in either usable or repairable condition? a) Generator, b) Radio, c) Television, d) Mobile, Telephone, e) Non-mobile Telephone, f) Refrigerator, g) Electric Fan, h) Watch or Clock, i) Umbrella, j) Large Cooking Pot, k) A Bicycle, l) A Motorcycle or Motor scooter, m) An animal-drawn cart, n) A Car or Truck, o) A Boat with no Motor, p) A Boat with a Motor

 (b) Agricultural asset index {hh}

  i. At present, how many agricultural assets does this household own in either usable or repairable condition? E.g. hoe, cutlass, shovel, spade, sickle, plough, cassava grater, thresher etc. (Dichotomized based on presence)

  ii. For each of the animals below, ask "How many "_ _ _ _ _ _ _ _ _ _ _ _" do members of the household own?" a) Cows/Bulls, b) Horses/Donkeys, c) Pigs, d) Goats, e) Sheep, f) Rabbits, g) Rodents, h) Fowl (Chickens), i) Ducks, j) Other Birds. (Dichotomized based on presence)

 (c) Dwelling materials index {hh}

  i. What is the main material of the floors of the house?

  ii. What is the material of the roof of the house?

  iii. What is the material of the exterior walls of the house?

 (d) Total consumption expenditure {hh}

  i. How much in total have members of your household spent on "_ _ _ _ _ _ _ _" (In the past month)?

  ii. Did you consume "_ _ _ _ _ _ _" from your own harvest or your own stock in the past month?

   A. How much of "_ _ _ _ _ _" did you consume in the past month?

   B. For how much would you sell this amount of "_ _ _ _ _ _ _ _ _" if you were to sell it now?

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