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May 2018

### The Impact of Health Service Delivery on Political Support: Evidence from the Nigerian Subsidy Re-investment and Empowerment Programme

**Adanna Chukwama**  
World Bank Group

**Thomas J. Bossert**  
Harvard T. H. Chan School of Public Health

## **Abstract**

Sub-Saharan African governments need to make substantial investments to expand access to quality health services, necessitating research that examines the incentives before politicians to make these investments. This paper examined the implications of a national maternal and child health intervention in Nigeria for trust in the President and the ruling party in geographically-matched households and facilities using difference-in-difference models. We show that proximity to intervention health facilities led to increases in trust in the President and the ruling party. Our findings also indicate that the effect of service delivery on trust did not significantly interact with patronage relationships between the President and citizens. More broadly, our findings contribute to the evidence on positive returns to improving physical access to quality health services in similar contexts in Africa.

## **Author Information**

**Adanna Chukwuma**

World Bank Group

**Thomas J. Bossert**

Harvard T. H. Chan School of Public Health

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## 1. Background

Elected representatives regularly make decisions that have welfare implications for their constituents. Their constituents, who are less informed about the welfare implications of policy options and the policy process than elected representatives, must also decide to trust the elected politician with these decisions or to incur the cost of forcing the politician to implement their demands (1). Trust involves the constituent's judgment that the elected politician is motivated and capable of acting in the constituent's interests and will do so in the absence of monitoring and coercion (2). When people trust, ceding control over policy choices to politicians, the capacity for cooperation and collective action increases, and the cost of organizing in a democracy reduces (3).

There are two main competing theories for the origins of trust, with differing implications for building the trustworthiness of political institutions (4). Per cultural theories, trust derives from beliefs about people that are rooted in societal norms and projected onto political institutions. These theories consider trust to be exogenous to (that is, out of the control of) the politician, influencing his or her capacity and motivation for performance in office (5) (6). Institutional theories, on the other hand, consider trust to be the result rather than the cause of institutional performance. These theories consider trust to be endogenous to (that is, within the control of) the politician (4). Micro variants of cultural and institutional theories provide explanations for how differences in trust arise at the individual level. While micro-cultural theories consider variation in trust to be the result of differences in how individuals are socialized, micro-institutional theories explain differences in trust by the links between individual preferences and experiences and their evaluations of institutional performance. Below, we review empirical evidence examining variation in trust in response to variables that are consistent with either theory.

Empirical studies of variation in trust in developed countries reveal evidence compatible with both cultural and institutional theories. Regardless of political history, electoral system, or style of government, there has been a downward trend in measures of trust in political institutions within advanced industrial democracies in the twentieth century (7). In line with institutional theories, economic recessions (8) and negative perceptions of economic performance (9) are associated with these declines in trust. However, despite strong correlations, rigorous studies of trends over time do not indicate a causal link between economic cycles or consumer confidence and trends in trust (10) (11). There is also mixed evidence that on the impact of performance on non-economic issues on trust (7). Empirical studies have also examined the role of mass media, primarily through evaluations of political institutions, in shaping trends in trust. Time series studies indicate there are weak links between media coverage and trends in trust in countries in North America and Europe (12). While trends in media content in advanced industrial countries indicate progressively negative evaluations of political institutions (13) that may have influenced the decline in trust (10), it may also be that media narratives are a consequence rather than a cause of public trust (14).

An examination of normative or cultural explanations for declining trust in advanced industrialized countries indicates stronger links between these factors and trust. In the seminal book, “Bowling Alone,” Robert Putnam argued declines in social capital, that is the weakening of ties between individuals and social communities, erodes trust (15), a claim corroborated by empirical research on the effects of social capital (16). Another cultural explanation for the decline in trust focuses on changing citizen values. Proponents of these factors argue that as citizen priorities broaden to include post-material values such as autonomy and self-actualization, they are less likely to express trust in political institutions (17). Similarly, when the norms of citizenship tend towards being engaged (which correlates with post-materialism and socioeconomic status (7)) rather than duty-based citizenship, empirical studies indicate a decline in trust (18).

There is also a growing theoretical and empirical literature that systematically examines trust in sub-Saharan Africa (19) (20) (21) (22) (23) (24) (25). A review of the literature indicates that at the individual level, similar variables correlate with trust in Sub-Saharan Africans as compared to citizens of advanced industrial countries (20) (25). In the Sub-Saharan context, however, there is a key contextual difference: neopatrimonialism, which has influenced institutional development with implications for the levels of trust that are consistent with cultural theories (25). Colonial regimes in Sub-Saharan Africa focused economic investments on single commodity exports, within defined sub-national areas. The concentration of economic activity resulted in limited participation in the formal economy outside these areas, reducing the opportunities for inter-group cohesion, in societies characterized by high pre-colonial intra-group cohesion (26). Following independence, control of state resources was transferred to political elites who distributed these resources within sub-national ethnic or regional patronage networks. Consequently, governments in several democracies in Sub-Saharan Africa can function and retain political power through resource rents independent of broad tax bases. Thus, the nature of politician-citizen relations is influenced by ethnic or regional origin, and parts of the population are excluded from benefits of and control over political institutions (25) (27) (28) (29) (30) (31) (32) (33) (34). Similarly, Nunn and Wantchekon have also argued that low levels of inter-ethnic trust in Africa can be traced back to the slave trade and general beliefs about different groups based on mistrust transmitted from parents to children over time (35).

Sub-Saharan African governments need to make substantial investments to expand access to quality health services. Thus, there is a need for research that examines the incentives before politicians to make these investments. While there is evidence that investing in service delivery predicts increases in political support in Africa (36) (37) (38) (39), there is also evidence suggesting that improved service provision predicts lower support for incumbents (40). The literature examining the links between service delivery and trust is also thin, relative to other indicators of political support, such as intentions to vote, political approval, and vote shares. Therefore, focusing on a national maternal and child health intervention implemented in Nigeria, a country in West Africa, this paper examines the implications of improvements in health service delivery for trust and thus, political support.

## 2. Study Design

### 2.1 Intervention Description

Our analysis focuses on the first phase of the Nigerian Subsidy Reinvestment and Empowerment Programme Maternal and Child Health Intervention (SURE-P MCH). In January 2012, the Nigerian President, an indigene of the South-Southern region, launched the national health programme which was to be funded by financial resources that accrued from the removal of fuel consumption subsidies. The goal of SURE-P MCH was to reduce preventable maternal and newborn mortality in Nigeria by increasing the use of quality health services in refurbished health facilities, provided by appropriately trained and equipped health workers. From October 2012 to January 2013, 9 to 16 facilities were selected to receive the intervention from each of the 36 states. These facilities were selected based on location in a rural area, a catchment population of more than 10000 residents, offering maternal and child health services, availability of minimum equipment and basic infrastructure (including potable water supply, power supply, and sewage disposal), and operating 24 hours daily<sup>1</sup>. The National Primary Health Care Development Board improved service delivery in the 500 selected facilities through deployment of unemployed, retired, and newly-graduated midwives; deployment of trained community health extension workers and village workers; facility building refurbishment; ensuring availability of essential medical supplies including delivery kits; and incentives (monetary and non-monetary) to encourage midwife retention.

### 2.2 Study Sample

We used data from five Afrobarometer surveys conducted in 2003, 2005, 2008, 2012, and 2015, spatially matched with the geographical locations of facilities selected for SURE-P MCH (41). The Afrobarometer surveys are nationally representative cross-sections of citizens of voting age in a country. Each survey used a multistage, clustered, stratified probability sampling design. First, the population was first stratified by urban and rural location. Secondary sampling units (SSUs) were identified, in which were nested primary sampling units (PSUs). A random sample of SSUs was selected. In rural areas, two PSUs were randomly sampled from each SSU. In urban areas, PSUs were sampled with probability proportional to the population size. Within each PSU, enumerators began at a randomly-selected starting point and sampled eight households for interviews in a systematic walk pattern. The gender of respondents was alternated for each interview. The sample size for each survey was about 2400 cases, yielding a margin of sampling error of plus or minus 2.0 percentage points at the 95% confidence interval.

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<sup>1</sup> In practice, these criteria were imperfectly applied during facility selection. For example, several selected facilities were in metropolitan areas, so that while most facilities were in rural areas, the actual probability of a facility being urban was not zero. We adjust for proxies of these selection factors in our analysis.

## 2.3 Dependent Variables

Nigeria is a federal republic, with 36 states distributed into six geopolitical zones or regions. In the major political parties, the office of the President, which heads the executive branch of the federal government, is rotated between regions, in pursuance of equitable sub-national access to the state's resources<sup>2</sup>. Since the democratic transition in 1999, Nigeria has elected four Presidents into office: Olusegun Obasanjo (1999-2007); Umaru Musa Yar'Adua (2007-2010); Goodluck Jonathan (2010-2015); and Muhammadu Buhari (2015-date). The Nigerian constitution allows a maximum of two terms, of four years per term, for each President. Since 1999, each incumbent was the Presidential candidate in the next election following his first term in office (apart from President Umaru Musa Yar'Adua who died while in office). As the incumbent President was not available to run for re-election, the ruling party presented an alternative candidate. Thus, we examine two measures of trust: trust in the President and trust in the ruling (incumbent President's) party. In each case, the survey tool prompted respondents to indicate their trust in the politician or political institution on a 4-point scale from zero (not at all) to three (a great deal). See Table 1 for variable definitions.

**Table 1: Variable definitions**

| Variable                            | Definition  |
|-------------------------------------|---|
| Trusts the President                | Respondent trusts the President, not at all (0), a little bit (1), a lot (2), or a great deal (3)   |
| Trusts the local council            | Respondent trusts the local council, not at all (0), a little bit (1), a lot (2), or a great deal (3)   |
| Trusts the ruling party             | Respondent trusts the ruling party, not at all (0), a little bit (1), a lot (2), or a great deal (3)  |
| Deprivation index                   | The arithmetic sum of responses to three questions, examining if respondent or member of family has forgone food at least once over the past one year (1), otherwise (0); respondent or member of family has forgone clean water for home use at least once over the past one year (1), otherwise (0); and/or respondent or member of family has forgone medicines or medical treatment at least once over the past one year (1), otherwise (0). Index values range from 0 to 3 |
| Media exposure index                | The arithmetic sum of responses to three questions, examining if respondent gets news from radio more than once a week (1), otherwise (0); respondent gets news from newspapers more than once a week (1), otherwise (0); and/or respondent gets news from television more than once a week (1), otherwise (0). Index values range from 0 to 3  |
| Age                                 | Age in years  |
| Female                              | Respondent is female (1), male (0)  |
| Urban residence                     | Respondent lives in urban area (1), otherwise (0)   |
| Co-regional with Nigerian President | Respondent is from the same region as the incumbent Nigerian President (1), otherwise (0)   |
| Up to secondary education           | Respondent has attended at least one year of Secondary School (1), otherwise (0)  |

<sup>2</sup> Article 7 subsection 2(c) of the 1999 constitution of the People's Democratic Party of Nigeria (the ruling party from 1990 to 2015), states that in pursuance of the principle of equity, justice and fairness, the party shall adhere to the policy of rotation and zoning of party and public elective offices, and it shall be enforced by the appropriate executive committee at all levels.



|                         |   |
|-------------------------|---|
| Piped water in PSU      | Presence of piped water in PSU that is accessible by most households (1), otherwise (0)                     |
| Electricity grid in PSU | Presence of an electricity grid in PSU that is accessible by most households (1), otherwise (0)             |
| Sewage system in PSU    | Presence of a modern sewage disposal system in PSU that is accessible by most households (1), otherwise (0) |

## 2.4 Intervention Variable

This study identifies the effect of the SURE-P MCH intervention by examining if there is a systematic relationship between proximity to intervention facilities and political support. In each survey cross-section, we matched the centroid of each respondent's PSU to the geographic coordinates of the nearest SURE-P MCH facility, to determine the straight-line distance between these points in meters. We considered voters who lived in PSUs within a fixed distance (X) in meters of the nearest SURE-P MCH facility to be exposed to the intervention. Others were assigned to the control group. An intuitive value for X might have been the radius of the average facility catchment area. However, there is no official definition of a facility catchment area in Nigeria or a national target for physical access to the nearest health facility given by the Nigerian Ministry of Health. Furthermore, the definition of a facility catchment area varies across similar countries in Sub-Saharan Africa. For example, the respective definitions of a facility catchment area in Zambia, Mali, and Malawi, include people living within 5000, 8000, and 10000 meters of the facility (42). In the absence of empirical data demonstrating distances beyond which maternal health clients would not use facility care on average, it is not apparent which of the above distances is the relevant target for the Nigerian context. Therefore, we constructed a series of intervention variables using the following distances in 1000-meter increments, from 1000 meters to 10000 meters. For the remainder of this discussion, unless otherwise stated, we have reported results for the 10000-meter intervention variable and discussed deviations from these results for other values of X as robustness checks.

## 2.5 Empirical Analysis

We modeled trust as a function of proximity to the nearest SURE-P MCH facility, using difference-in-difference models. For each measure of trust, we specified a linear probability model as follows:

$$Y_{ijt} = \alpha_{ij} + \gamma * SUREP_{ijt} + \beta Post_t + \delta (SUREP_{ijt} * Post_t) + X_{ijt} + \varepsilon_{ijt}$$

Where the level of trust expressed in the politician or political institution is ( $Y_{ijt}$ ) for respondent  $i$  in PSU  $j$  at time  $t$ ;  $X_{ijt}$  is a vector of time-varying covariates;  $SUREP_{ijt}$  is equal to 1 if the respondent lives within 10000 meters of the nearest SURE-P MCH facility and 0 otherwise;  $Post_t$  is equal to 1 if the survey occurred after the intervention began in October 2012 and 0 otherwise;  $\delta$  is the DID estimate if the identifying assumptions discussed briefly below hold; and the standard errors are robust and clustered at the PSU level. We adjusted for covariates described in the

background as correlating with trust, which are predetermined relative to the intervention, improving the precision of study estimates. These covariates include: mass media exposure (radio, television, and newspaper); demographic characteristics (age, education, gender, and urban residence); an indicator for belonging to the President's patronage network (being from the same region as the incumbent President); and factors that may have correlated with the selection of facilities in the PSU for the intervention (presence of an electricity grid, piped water, and a sewage system accessible by most houses).

Sampling weights were applied in the main model and sensitivity of findings to these weights were examined as robustness checks. We also model the dependent variable using ordered logit models as a robustness check. The empirical model estimates the impact of the intervention on trust under two assumptions (43). First, that in the absence of the intervention, trends in the levels of trust would be parallel. We present evidence suggesting that we cannot reject the null hypothesis of parallel trends as a robustness check. Another key assumption is that within the study period, there was no other national intervention with a distribution akin to the nationwide SURE-P MCH intervention took place, which is accurate to our knowledge. This study involved secondary analysis of anonymous data obtained as part of research protocols with ethical approvals obtained at the University of Capetown (Afrobarometer dataset).

### **3. Results**

#### **3.1 Baseline Predictors of Proximity to SURE-P MCH Facilities**

To describe the distribution of voters at baseline, we explored factors that predicted proximity to SURE-P MCH facilities in the survey years before the start date (Table 2). At baseline, voters located within 10000 meters of the nearest SURE-P MCH facility were less likely to express trust in the President or ruling party and to have forgone food, water, or medical care in their households in the past one year. On average, voters in the intervention group were more likely to follow the news on mass media, be from the President's region, have at least secondary education, and live in a PSU that was urban with access to an electricity grid, piped water, and a sewage system. The selection criteria for SURE-P MCH facilities were not strictly adhered to as is evident from the higher probability of urban residents in the intervention group. The need for equipment and basic infrastructure in intervention health facilities may have prevented the selection of more rural sites for the intervention. In summary, the predictors of proximity to SURE-P MCH facilities suggest advantages for non-poor and informed voters who lived urban PSUs that already had access to public infrastructure, and who resided in the President's region. As these factors may correlate with political support as well, we adjust for them in our analysis.

**Table 2: Baseline characteristics of voters in intervention and control groups**

| Variable                   | Control Mean | Intervention Mean | Control - Intervention | P-value |
|----------------------------|--------------|-------------------|------------------------|---------|
| Trust the president        | 1.077        | 0.814             | 0.263                  | <0.0001 |
| [SE]                       | 0.014        | 0.018             |                        |         |
| Trust the ruling party     | 0.887        | 0.637             | 0.250                  | <0.0001 |
| [SE]                       | 0.013        | 0.017             |                        |         |
| Deprivation index          | 1.756        | 1.597             | 0.159                  | <0.0001 |
| [SE]                       | 0.017        | 0.026             |                        |         |
| Mass media index           | 1.551        | 1.935             | -0.384                 | <0.0001 |
| [SE]                       | 0.014        | 0.020             |                        |         |
| Age                        | 31.800       | 30.895            | 0.906                  | 0.004   |
| [SE]                       | 0.173        | 0.262             |                        |         |
| Female                     | 0.500        | 0.500             | 0.000                  | 0.986   |
| [SE]                       | 0.007        | 0.011             |                        |         |
| Urban residence            | 0.413        | 0.683             | -0.270                 | <0.0001 |
| [SE]                       | 0.007        | 0.010             |                        |         |
| Co-regional with President | 0.178        | 0.286             | -0.108                 | <0.0001 |
| [SE]                       | 0.005        | 0.010             |                        |         |
| Up to secondary education  | 0.629        | 0.797             | -0.168                 | <0.0001 |
| [SE]                       | 0.007        | 0.009             |                        |         |
| Piped water in PSU         | 0.376        | 0.466             | -0.089                 | <0.0001 |
| [SE]                       | 0.007        | 0.011             |                        |         |
| Electricity grid in PSU    | 0.729        | 0.878             | -0.149                 | <0.0001 |
| [SE]                       | 0.006        | 0.007             |                        |         |
| Sewage system in PSU       | 0.258        | 0.306             | -0.048                 | <0.0001 |
| [SE]                       | 0.006        | 0.010             |                        |         |
| N                          | 4,908        | 2,207             |                        |         |

### 3.2 Intervention Effects on Trust

In Table 3, we show that the relationship between living within 10000 meters of the nearest SURE-P MCH facility and the voter's level of trust in the President and ruling party is positive and statistically significant. These effects were robust to adjustments for baseline predictors of selection of SURE-P MCH facilities and re-specification using ordered logit models and without sampling weights (not shown).

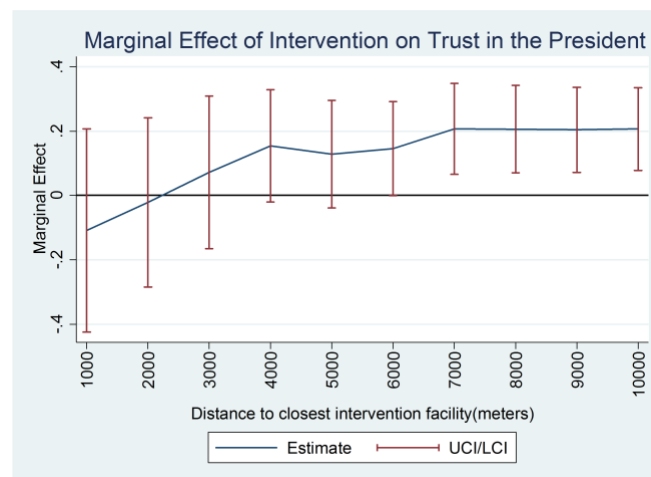
**Table 3: Average intervention effects on trust in the President and ruling party**

|              | Trusts the President |       | Trusts the ruling party |       |
|--------------|----------------------|-------|-------------------------|-------|
| SUREP X Post | 0.193                | 0.207 | 0.187                   | 0.184 |

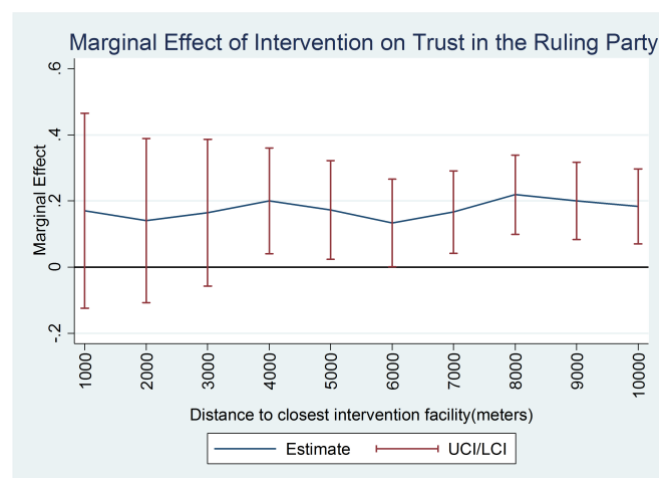
|                    |         |         |         |         |
|--------------------|---------|---------|---------|---------|
| [SE]               | [0.065] | [0.065] | [0.058] | [0.058] |
| P-value            | 0.003   | 0.002   | 0.001   | 0.001   |
|                    |         |         |         |         |
| Control            | 1.109   | 1.095   | 0.914   | 0.980   |
| F-stat             | 21.040  | 52.120  | 34.840  | 10.930  |
| N                  | 11,915  | 11,839  | 11,915  | 11,839  |
| Controls included? | No      | Yes     | No      | Yes     |

We also examined the sensitivity of these findings to the definition of exposure to the intervention by the distance to the nearest SURE-P MCH facility. We varied this distance from 1000 to 10000 meters. As shown in Figure 1 and Figure 2 below, proximity to SURE-P MCH facilities leads to increases in trust in the President and ruling party within distances as low as 6000 meters and 4000 meters respectively.

**Figure 1: Distance variation in marginal effect on trust in the President**

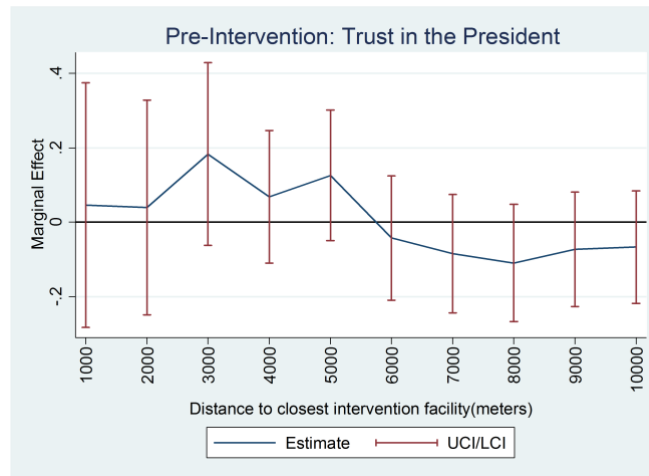


**Figure 2: Distance variation in marginal effect on trust in the ruling party**

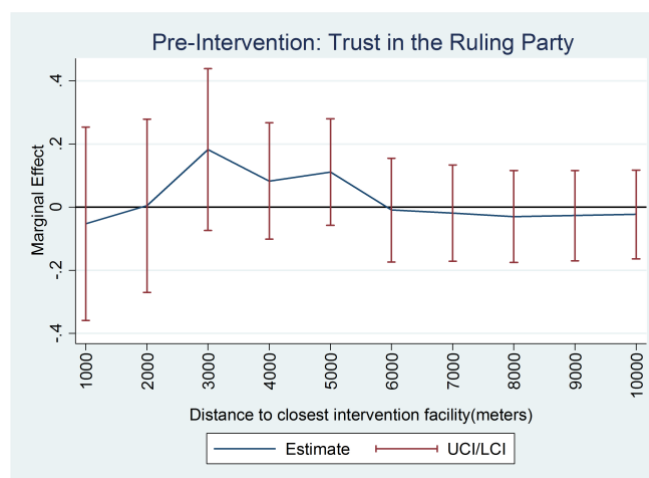


While the parallel trends assumption is untestable, we also provide evidence that pre-intervention trends in the outcomes were parallel. We re-estimated the empirical model in a sub-sample restricted to data points before the programme launch in October 2012, with a placebo start date of 2005, using intervention variables defined from 1000 to 10000 meters. In Figure 3 and Figure 4, we show that we are unable to reject the null hypotheses that the coefficients are equal to zero at the 0.05 level.

**Figure 3: Pre-intervention estimates for trust in the President**



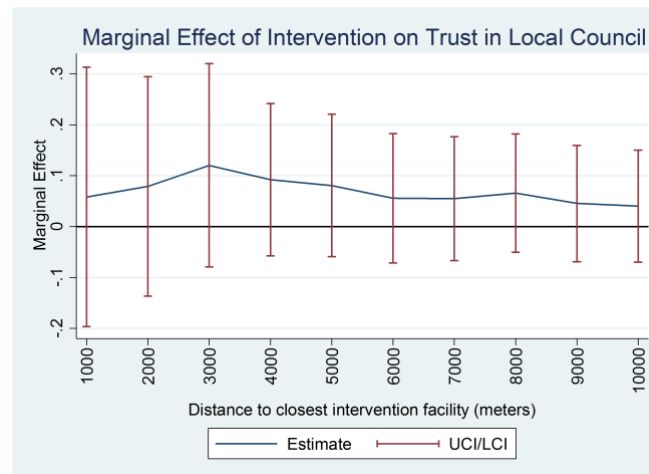
**Figure 4: Pre-intervention estimates for trust in the ruling party**



As a placebo test, we estimated the impact of the SURE-P MCH intervention on trust in the local council. The local council is the executive branch of the local government area, a sub-unit of the State and the lowest level of

government in Nigeria. In the 1999 Constitution, the provision of basic health care is the responsibility of local governments, with the support of State Ministries of Health (44). In January 2012, nationwide protests followed the announcement of the removal of fossil fuel consumption subsidies by the Nigerian President. Savings from the partial removal of subsidies on consumption of petroleum products were invested in projects designed to improve service delivery and infrastructure, including SURE-P MCH, to resolve the political crisis. Thus, we would expect that facility improvements in SURE-P MCH would be attributed to the President, notwithstanding the primary responsibility of local councils to improve basic health care. We estimated the impact of distance from the nearest SURE-P MCH facility on trust in the local council, using intervention variables defined from 1000 to 10000 meters. In keeping with the explanation above, in Figure 5, we show that we are unable to reject the null hypotheses that the coefficients are equal to zero at the 0.05 level.

**Figure 5: Distance variation in marginal effect on trust in the local council**



Finally, as discussed in the background, originating from the same ethnic or regional group as a politician (co-regionality) has been shown to predict access to state resources and social services. At baseline, voters who lived in the President's region were more likely to be located closer to facilities selected for the SURE-P MCH intervention, suggesting a potential role for clientelist considerations in what was supposed to be a nationally-representative selection of facility sites. It may then also be that the average increases in trust are driven by voters from the President's region in the quid pro quo actions that characterize clientelist exchanges. Thus, we examined variation in the intervention effect with an indicator for residence in the President's region. In Table 4, we show that co-regionality does not significantly interact with the intervention effect on trust in the President.

**Table 4: Interaction between trust in the President and co-regionality**

| .                                 | 1000m   | 2000m  | 3000m  | 4000m  | 5000m  | 6000m  | 7000m  | 8000m  | 9000m  | 10000m |
|-----------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| President's region X SUREP X Post | 0.740   | 0.543  | 0.090  | -0.100 | -0.103 | -0.092 | 0.043  | 0.035  | 0.020  | 0.066  |
| [SE]                              | 0.133   | 0.175  | 0.248  | 0.189  | 0.187  | 0.162  | 0.198  | 0.169  | 0.155  | 0.143  |
| P-value                           | <0.0001 | 0.002  | 0.717  | 0.596  | 0.582  | 0.57   | 0.827  | 0.837  | 0.896  | 0.644  |
|                                   |         |        |        |        |        |        |        |        |        |        |
| SUREP X Post                      | -0.016  | 0.046  | 0.176  | 0.226  | 0.206  | 0.203  | 0.234  | 0.213  | 0.218  | 0.211  |
| [SE]                              | 0.157   | 0.131  | 0.119  | 0.090  | 0.086  | 0.076  | 0.071  | 0.069  | 0.067  | 0.065  |
| P-value                           | 0.92    | 0.725  | 0.142  | 0.012  | 0.017  | 0.007  | 0.001  | 0.002  | 0.001  | 0.001  |
|                                   |         |        |        |        |        |        |        |        |        |        |
| Constant                          | 1.008   | 1.010  | 1.011  | 1.008  | 1.012  | 1.018  | 1.028  | 1.031  | 1.029  | 1.036  |
| F-stat                            | .       | 6.310  | 5.290  | 6.730  | 6.340  | 6.930  | 8.150  | 7.950  | 8.670  | 8.700  |
| N                                 | 11,839  | 11,839 | 11,839 | 11,839 | 11,839 | 11,839 | 11,839 | 11,839 | 11,839 | 11,839 |
| Controls included?                | Yes     | Yes    | Yes    | Yes    | Yes    | Yes    | Yes    | Yes    | Yes    | Yes    |

## 4. Conclusion

This paper is one of the few to causally estimate the links between health service delivery and political support in Sub-Saharan Africa. We show that physical access to quality maternal and child health services led to increases in trust in the President and the ruling party. Our study indicates that the effects of health service delivery on trust do not interact with patronage relationships between the politician and citizens. These findings agree with evidence from a prior cross-sectional study showing that health system performance predicts higher confidence in government in developing countries (45). More broadly, we also contribute to the growing body of evidence on the increases in political support that accrue to politicians that invest in service delivery in Africa (36) (37) (38) (39). These findings further bolster the case for politicians to make health system investments in African countries to improve population health and reap political rewards.

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