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UNIVERSITY OF CALIFORNIA, SAN DIEGO

**Preventable Deaths: Children, Diarrhea, and the Politics of Oral
Rehydration Solution in Kenya**

A Dissertation submitted in partial satisfaction of the
requirements for the degree
Doctor of Philosophy

in

Political Science

by

Nathan John Combes

Committee in charge:

Professor Karen E. Ferree, Chair
Professor Clark C. Gibson, Co-Chair
Professor Stephan Haggard
Professor Gordon C. McCord
Professor Holly B. Shakya

2016

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The Dissertation of Nathan John Combes is approved,
and it is acceptable in quality and form for publication
on microfilm and electronically:

Co-Chair

Chair

University of California, San Diego

2016

DEDICATION

To my parents, brothers, and Michelle.

EPIGRAPH

Whatever you do, do it with excellence.

Follow your passion.

Finish vertical.

—Rick Combes, my dad

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Chapter 5, in full, is coauthored with Alexandra Voight. The dissertation author is the principal researcher and author. Combes, Nathan J. and Alexandra Voight. “Visible Health Services Win Votes”.

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ABSTRACT OF THE DISSERTATION

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Doctor of Philosophy in Political Science

University of California, San Diego, 2016

Professor Karen E. Ferree, Chair
Professor Clark C. Gibson, Co-Chair

Every year in Kenya, more than 100,000 children under the age of five die. 90 percent of these deaths can be avoided via the administration of basic essential medicines. Diarrhea is one illness that is easily and cheaply treated, yet more than 5,400 Kenyan children die from it every year. Proper use of oral rehydration solution (ORS) prevents mortality in 93 percent of diarrheal cases, and the average daily dose costs only 15 US cents. Children are dying because they are not receiving this effective and affordable treatment. The main claim of this dissertation is that low

uptake of ORS in Kenya is a problem of supply not demand. Contrary to previous scholarship, I will show that Kenyans demand ORS and administer it to their children when it is available. However, ORS is frequently out of stock in local dispensaries. Using data from an independent audit, I show that 40 percent of Ministry of Health dispensaries in western Kenya have zero ORS in stock. I offer suggestive evidence of what is causing this lack of supply: politicians in Kenya are more incentivized to provide highly visible projects rather than high-impact, low-cost solutions.

Chapter 1

Introduction

Diarrhea kills more than 5,400 Kenyan children under the age of five annually (World Health Organization, 2016a).¹ The conventional treatment for the condition — oral rehydration solution (ORS) — is both highly effective and inexpensive. Proper use of ORS prevents death in 93 percent of cases (Munos et al., 2010), and the average daily dose costs only 15 US cents (Kenya Medical Supplies Authority, 2013). Why are Kenya’s children not receiving this life-saving treatment?

Conventional wisdom and contemporary research argue that democracies tend to produce more and higher quality public services than non-democracies. This is especially true when citizens believe the service is necessary and electorally salient. These conditions appear to fit the case of diarrheal disease in Kenya well. Kenya is a functioning democracy with a Polity score of 8² and boasts an 86 percent voter turnout rate (International Institute for Democracy and Electoral Assistance,

¹This is a conservative estimate. Estimates of the annual number of deaths caused by diarrhea in Kenya range from 5,400 (World Health Organization, 2016a) to 38,800, which is cited by the Government of Kenya (Ministry of Public Health and Sanitation, 2011) and USAID (Abt Associates and United States Agency for International Development, 2011). I have chosen to use the most conservative estimate throughout this dissertation.

²43 percent of countries had a Polity score of 8 or higher in 2010.

2011). As detailed in this dissertation, Kenyans believe that ORS is necessary, the government is responsible for providing it, and child mortality is an electorally salient issue. However, while recent trends show a decline in Kenya's diarrheal mortality rate, it remains stubbornly high.³

Specific studies exploring Kenya's mortality rate argue that parents do not demand ORS, leading to low ORS uptake and subsequent deaths of children (Goel et al., 1996; Omoro et al., 2013; Othero et al., 2008). These studies suggest that the solution to diarrheal mortality is behavioral change.

In contrast, I argue that the low uptake of ORS and its consequences for child mortality is caused by a lack of supply from the government, not a failure of citizen demand. To support my assertion, this dissertation explains four related questions. First, do Kenyans demand ORS and administer it to their children when it is available? Second, does the government stock ORS in Ministry of Health dispensaries? Third, is this issue electorally salient and do voters reward politicians for successful outcomes? Finally, how do politicians respond to these incentives?

In Chapter 2, I show that demand for ORS is high in Kenya. I do this via a survey of 1,006 Kenyan parents. I find that Kenyan parents prioritize children's health and understand that the government is responsible for public health. Furthermore, parents know that ORS is the gold standard of treatment for diarrhea and administer it to their children when it is available. However, parents report that ORS is frequently unavailable in local health facilities.

In Chapter 3, I confirm parents' assertions that ORS is widely unavailable. To measure the availability of ORS, I conduct an independent audit of the Ministry

³Kenya's child mortality rate from diarrhea is higher than 70 percent of countries that are in the same quintile of purchasing power parity (World Health Organization, 2016a; World Bank, 2016)

of Health (MoH) dispensary system in western Kenya. I find that 40 percent of dispensaries are out of stock of ORS (not a single unit of ORS exists at those dispensaries). This lack of supply exists despite dispensary workers ordering new medicines from their county ministries of health. The failure of supply is coming from a level above that of the dispensaries.

Chapter 4 shows that voters incentivize politicians to provide child health services. Adequate provision of services in a democracy requires that constituents value the service and vote for the candidate who they believe is most likely to deliver it. I find that both of these are true with regards to child mortality in Kenya. I show that voters in Kenya prefer politicians to provide services for health over other sectors. Then, in a survey experiment, I show that voters are more likely to vote for candidates who pledge to decrease child mortality. As such, it is a rational strategy for politicians to provide child health services to win votes.

Lastly, I provide suggestive evidence for why politicians are choosing not to provide ORS. In Chapter 5, I will show that local politicians allocate resources to constructing new dispensaries (of which they rarely complete construction) rather than ORS. Unfinished government projects in Kenya are called “white elephants”. I provide evidence from content analysis of local newspapers and interviews with local politicians to show the oversupply of new medical facilities in Kenya. I provide a theoretical explanation for the seemingly puzzling behavior of building incomplete dispensaries rather than stocking existing ones. I speculate that politicians are incentivized to provide services that are highly visible to their people, of which buildings are an ideal example. I hypothesize that this is the case because voters do not have perfect information about the actions of their politicians. Given this

imperfect information environment, politicians deliver services for which their constituents can easily account. Using data from interviews, I show that local politicians acknowledge their electoral motivation to provide visible health services. The result is a systematic undersupply of high impact, low-cost essential medicines such as ORS.

This dissertation speaks to four different literatures. First, I show that Kenyans have a much higher demand for ORS than previously reported in public health publications. Second, I contribute to the literature on the determinants of the Kenyan vote, showing that health is an electorally salient issue. Third, I add to the literature on responsiveness and credit-claiming; showing that politicians are more incentivized to *appear to improve health* than to actually improve it. Lastly, the combination of these results challenge the notion that democratic elections are sufficient to incentivize better provision of child health services.

1.1 Consequences, Causes, and Treatments of Diarrhea

Child mortality around the world is a severe problem, particularly in Africa. Millennium Development Goal number 4 called for all countries to cut their under-five mortality rate to two-thirds of what it was in 1990 by the end of 2015; a target that the world failed to achieve (Galatsidas and Sheehy, 2015). This failure is especially startling when we consider that 70 percent of under-five deaths are easily prevented with the administration of basic essential medicines (World Health Organization, 2011). More drastically, mortality from diarrhea can be prevented in

93 percent of cases with the use of oral rehydration solution (ORS), a highly effective and inexpensive treatment (Munos et al., 2010). Despite the mass production of ORS, diarrhea continues to be the second leading killer of children worldwide.

Childhood diarrhea accounts for 800,000 deaths of children under the age of five per year; which is more than AIDS and malaria combined (World Health Organization, 2016a). For comparison, Zawahri et al. (2011) notes that the number of child deaths from diarrhea in the 1990s exceeded the total number of deaths from armed conflict since WWII. The burden of diarrheal mortality is grave in Kenya, where the government estimates that 38,800 children died from diarrhea in 2008 (Ministry of Public Health and Sanitation, 2011; Abt Associates and United States Agency for International Development, 2011), and at least 5,400 children die annually (World Health Organization, 2016a).⁴

Beyond the tragedy of death, diarrhea affects the economy. Numerous workdays are lost every year when parents stay home to care for sick children or are personally afflicted with diarrhea (Chaplin, 2011). Similarly, diarrheal illness causes children to miss school, limiting the quality of their education (Mollinga, 2006). These effects are long lasting: Zawahri et al. (2011) show that children are less educated because of missing school and can suffer from under-development as a result of sustained diarrheal illness.

In Kenya, the high mortality rate from diarrhea exists despite the constitution requiring the state to provide ORS for free.⁵ Diarrhea kills 3.6 of every one-thousand

⁴The World Health Organization (2016a) estimates that 9,245 children under the age of five died from diarrhea in Kenya in 2008.

⁵“It is government policy that the child health services in public facilities be provide free to children under five years in order to remove any financial barriers” (National Council for Population and Development and ICF MACRO, 2012).

children born in Kenya, which accounts for over 5,400 deaths per year (World Health Organization, 2016a). While the mortality rate from diarrhea has certainly dropped in Kenya, it has not decreased as quickly as the HIV/AIDS child mortality rate (despite HIV/AIDS being incurable and more expensive to treat) and remains the number two killer of children in Kenya (see Figure 1.1). In 2015, 7.3 percent of all child deaths in Kenya were from diarrhea (World Health Organization, 2016a). Many African countries have reduced their diarrheal mortality rate, though nearly all of those rates remain above three out of every thousand live births. Comparatively, several countries in the Middle East, Asia, and Latin America have been able to reduce their diarrheal mortality rates to below two out of every thousand live births (see Figure 1.2). In most western democracies, the diarrheal mortality rate is zero (World Health Organization, 2016a). While Kenya has decreased its diarrheal mortality rate in recent years, thousands of children still die from this preventable disease.

The Ministry of Public Health and Sanitation believes that 23,000 Kenyan children's lives would be saved in two years' time if ORS use were universal (Ministry of Public Health and Sanitation, 2011). The consistently high child mortality rate suggests that either something is broken in the process of delivering ORS to patients, or that patients do not use ORS when it is available. This dissertation investigates if diarrheal mortality in Kenya is more the result of a failure of demand or a failure of supply.

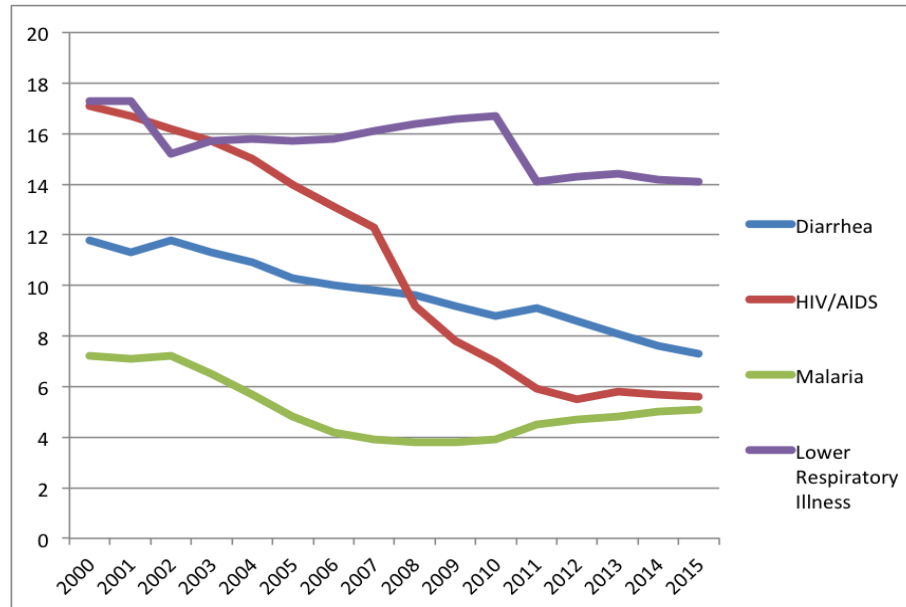


Figure 1.1: Child Mortality Rate from Four Illnesses in Kenya, 2000-2015

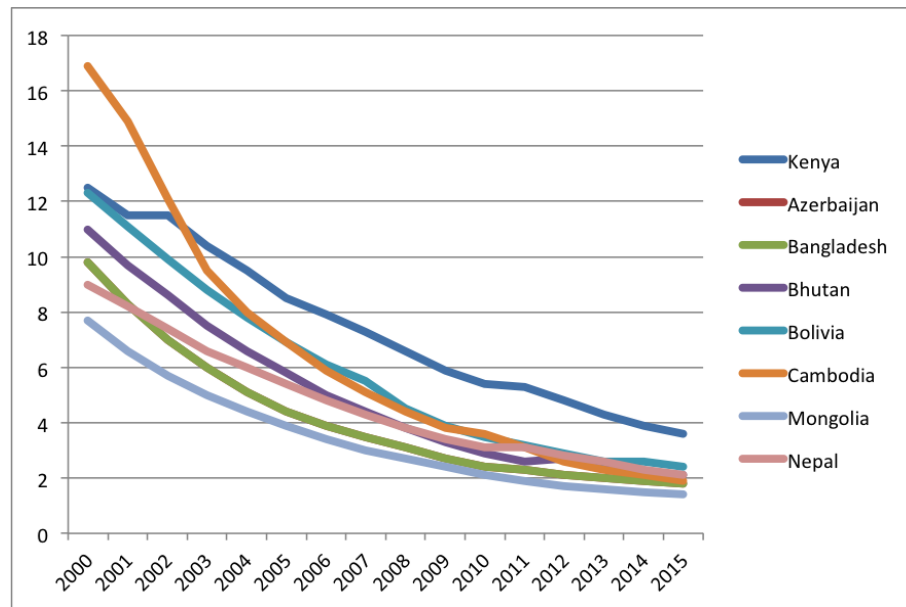


Figure 1.2: Decrease in Diarrheal Mortality Rate in Eight Countries, 2000-2015

Diarrhea is caused when one of several bacteria, viruses, or pathogens are ingested. Rotavirus, Cryptosporidium, Shigella, and enterotoxigenic *E. coli* cause the majority of diarrheal cases (Center for Disease Control, 2015). A person contracts

a diarrheal disease by ingesting these bacteria or viruses through contaminated fecal matter. Mortality from diarrhea can be prevented by evading initial incidence of the disease or proper treatment after onset. The most common vectors of contaminated fecal matter are unclean water and unwashed hands. As such, the key to preventing diarrheal incidence is to prevent the ingestion of contaminants. Children who die from diarrheal diseases almost always die as a result of dehydration. As such, the key to treating an infected patient is to keep her well hydrated and nourished (World Health Organization, 2005).

Experts present two general ways to prevent diarrheal transmission: contain fecal matter or sanitize the vectors that fecal matter contaminates (mostly water). Proper sanitation can prevent a large proportion of diarrheal cases. Stopping the spread of contaminated fecal matter requires well-maintained sanitation facilities for defecation (Chaplin, 2011). Such facilities generally mean pit latrines, public toilet facilities, or private home facilities. Pit latrines are small freestanding rooms with a large pit dug in the ground for people to defecate. Widespread use of latrines would decrease the spread of diarrhea by containing fecal matter underground. This treatment is often unsuccessful for three reasons. First, infants cannot use the latrines and most often defecate in their home. As young children are the primary victims of diarrheal disease, contaminated diarrhea continues to exist outside of the latrines and inside the home. Second, citizens do not always use the latrines because they smell bad, are dirty, and sometimes require patrons to wait in lines (Chaplin, 2011). Lastly, many women and children fear using latrines at night, as predators know that there will be women in vulnerable positions there. At night, women and children frequently continue to use plastic bags (often called “flying toilets”⁶) or public water

⁶Flying toilets are plastic bags that have been used for defecation, and are typically left in fields

sources for their fecal waste (Owusu, 2010).

A second strategy to prevent the transmission of diarrheal disease is to provide public toilets. Public toilets generally include a number of above ground toilet stalls with an opening into a pit latrine. These structures are easier for younger children to use. However, many of the same obstacles as pit latrines arise (that it can be unsafe for women and children, and that waiting in line often deters people from using them) (Owusu, 2010). In addition, public toilets are often unkempt as cleaning and emptying cost money. Once the stalls are filled to capacity with fecal matter, the original issue of spreading disease through contaminated feces is reborn.

Lastly, the safest way to manage feces is to provide in-home sanitation facilities. The per-family cost, as well as the cost of creating an underground sewage system, are too costly for most developing countries to consider for rural areas.

In addition to containment strategies, diarrhea can be prevented by maintaining a clean water supply. Water is the most common vector by which diarrheal diseases spread. Many diseases end up in the water supply because of feces being left in the open or directly deposited into common water sources. Sanitizing the water before personal use is one method to prevent the incidence of diarrheal disease, and is more cost effective than creating sanitation systems. To discuss the cost effectiveness of sanitizing water, I rely on a study from the Abdul Latif Jameel Poverty Action Lab (JPAL) (J-PAL Policy Briefcase, 2012). JPAL conducted a cost effectiveness analysis on three ways in which water can be treated to prevent diarrheal incidence: piped water, providing homes with chlorine tablets, and providing public chlorine dispensers at water sources. For each, they estimated the

or on the side of the road.

reduced number of diarrheal incidence for every \$1,000 of government expenditure. They find that \$1,000 of government spending on piped water would prevent 305 incidences, \$1,000 spent on home delivered chlorine tables would prevent 333 incidences, and \$1,000 spent on providing chlorine dispensers at public water sources would prevent 494 incidences. How well do these interventions succeed in preventing death? A conservative estimate is that 1 in 200 incidences of diarrhea lead to death (Obaro and Palmer, 2003). This means the provision of public chlorine dispensers could prevent 2.5 deaths from diarrheal disease with every \$1,000 spent.

Alongside preventing the onset of the disease, we can prevent mortality from diarrhea nearly 100 percent of the time. A combination of ORS and zinc is the gold standard of treatment for diarrhea (World Health Organization, 2005). The best way to treat a child who is ill with diarrhea is to keep her well hydrated and to allow the body to flush out the illness.

For a long time, ORS alone was considered the gold standard of treatment for diarrheal disease. ORS replenishes fluids and electrolytes to keep a child well hydrated and nourished during bouts of diarrhea. Recently, experts have advised prescribing zinc with ORS, because zinc decreases both the symptoms and the severity of the illness without increasing the chance of death (like antidiarrheals). In practice, zinc and ORS combined use occurs in less than one percent of diarrheal incidences in Kenya (Mbiti et al., 2015). Because of this, this dissertation will focus on the delivery and uptake of ORS, which alone will prevent over 93 percent of cases of diarrheal mortality when used properly (Munos et al., 2010).

Is it cost prohibitive to supply ORS to a country's children? I calculate that the cost of providing ORS to every child in Kenya would be marginally low in terms of

supplies. Approximately 5,400 children die from diarrhea in Kenya every year (World Health Organization, 2016a). I assume that each of those children would need three sachets⁷ of ORS over a seven-day period to survive the disease, so I multiply 21 sachets of ORS by 5,400. Since the government pays five cents per sachet (Kenya Medical Supplies Authority, 2013), the entire cost of ORS provision to the 5,400 children would be \$5,670.

Of course, it is difficult to target each of the most vulnerable kids. How much would it cost to treat every childhood diarrhea case in Kenya for one year? For the sake of argument, I estimate the upper-bound limit of how much it would cost to treat every case of diarrhea in Kenya. Approximately six million children live in Kenya (UNICEF, 2013). The average child experiences three incidences of diarrhea annually (World Health Organization, 2013); so I will assume that every Kenyan child experiences six bouts of diarrhea per year to ensure that this calculation represents the upper-bound. Acute diarrhea is defined as lasting less than fourteen days, so I will assume that all cases last the maximum length of time for that disease (Huang et al. estimate that the average bout of untreated diarrhea lasts six days). The maximum dosage of ORS per day is six sachets. The Government of Kenya purchases ORS for a little less than five cents per sachet (Kenya Medical Supplies Authority, 2013). Thus, the upper-bound estimate of the total cost of ORS for the entire country of Kenya is \$151.2 million annually ($6,000,000 \times 6 \times 14 \times 6 \times 0.05 = 151,200,000$). For reference, the total Kenyan health budget is about \$500 million per year (Ministry of Health, 2015).

The World Health Organization (WHO) estimates that 1.7 billion incidences of

⁷The maximum daily dosage of ORS is six sachets per day, as indicated on the WHO supplied ORS packaging.

diarrhea occur worldwide every year. If we estimate that the average bout will last six days and that each child will take six sachets of ORS per day (which is an extreme overestimation), we could treat every incident of childhood diarrhea worldwide for about \$3 billion per year.

The above estimates do not take transportation or storage costs into account, which would be difficult to estimate. However, I argue that ORS is of the least expensive treatments to ship and store. Each sachet is lightweight and does not require any special care in its handling (such as constant refrigeration that some medications and vaccines require). Therefore, if the global health community is able to ship and store any medicine, they should also be able to do so for ORS with a marginal additional cost.

Availability of ORS in Kenya is the primary focus of this dissertation. It is an ideal good to focus on because it is highly impactful and politicians can provide it quickly, easily, and cheaply. It is also the cure for the most deadly communicable disease in children, so its provision would be impactful. How do political and administrative factors influence the availability of this low-cost intervention in Kenya?

1.2 The Case of Kenya

I will be investigating the delivery of child health services in Kenya. Kenya is a functioning democracy with 86 percent voter turnout (International Institute for Democracy and Electoral Assistance, 2011); yet many areas are not receiving basic health or sanitation services. Particularly interesting is the lack of oral rehydration solution, one of the least expensive health services in existence. McGuire (2010),

one of the leading scholars on the topic of health in political science, argues that democracies are more likely to deliver these less expensive services. What is preventing Kenyan politicians from delivering in-demand goods like ORS?

This dissertation will challenge the notion that democratic competition always promotes better service delivery. Instead, I will show that in some cases, electoral competition creates perverse incentives in which politicians rationally deliver services that have a bigger impact on their chances of reelection than on the health of their people. Politicians are able to do this by providing services that are visible to the greatest number of people.

Health indicators in Kenya reasonably resemble the average African nation. Kenya is an ideal case to study because local politicians have the discretionary power to independently provide ORS to their local dispensaries. In 2013, Kenya devolved the power of service provision to local counties with the intention of improving local service delivery (Ghai, 2008). However, ORS is frequently unavailable in Kenyan dispensaries. This represents a major failure in the provision of public services by the Government of Kenya (GoK), which is tasked with guaranteeing the health of children in the 2010 Constitution.

Kenya has the financial means to prevent mortality from childhood diarrhea. Kenya has the sixth highest GDP in Sub-Saharan Africa (CIA World Factbook, 2016). Its capital city (Nairobi) is full of glass skyscrapers and personal vehicles. Nairobi is an international, cosmopolitan powerhouse where business leaders regularly visit. 93 percent of families in Kenya own a cell phone, many of who engage in a modern mobile-money system called MPESA (where they can bank, buy goods, and share money via their cell phones).

A brief understanding of Kenya's historical politics help us understand its poor service provision despite access to sufficient funds. Poor service delivery in Kenya might partially be explained by a strong correlation (historically and in present) between vote choice and ethnicity. The two largest (and most politically influential groups) are the Kikuyu and the Luo. Kikuyu's have dominated national politics and held three out of four presidencies. The Luo are the perennial challengers in the Kenyan system; mostly backing Raila Odinga who has won second place in three presidential elections and is set to run again in 2017. Raila served as the Prime Minister from 2008 to 2013 in a coalition government that set out to award more political advantage to the perennial opposition. The third largest ethnic power in Kenya are the Kalenjin; who held the presidency via Daniel Arap Moi from 1978 to 2002 and currently hold the vice presidency under William Ruto.

Central regions of Kenya have been given disproportionate allocations of government services. All four of Kenya's presidents have hailed from centrally located regions, and largely relied on their core constituents for support. Partly as a result of this, government services in Kenya are better developed in central areas, with the outskirts of the country remaining poorly served and less developed.

While ethnic favoritism is strong in Kenya, it requires a coalition of voters for any individual to win a majority of votes (and thus win the presidency). As such, Kenyans also take performance and issues into consideration. Long and Gibson (2009) use exit polls from Kenya's 2007 elections to show that performance and issues matter in the Kenyan vote. This dissertation will show that health is a particularly salient issue in Kenyan elections, and that voters are more likely to vote for a politician who pledges to decrease child mortality. Theoretically, this should provide incentive for

incumbent politicians to provide better health services.

To understand how services are delivered in Kenya, we need to look at government structure. The national executive of Kenya is the president (currently Uhuru Kenyatta), and the lower house of the legislature is the National Assembly, comprised of Members of Parliament (MPs) (Government of Kenya, 2016). In 2010, Kenyans voted for a new constitution which restructured the government in a number of ways; commencing with the 2013 elections (Finch and Musira, 2016). Changes at the national level of government included each county electing a Women's Representative to serve in the National Assembly and the institution of an upper house of the legislature called the Senate, comprised of one Senator from each county.

The most influential change of the 2013 devolution was to decentralize significant power to 47 counties (Finch and Musira, 2016). Each Kenyan county has a governor as its executive. The legislature of each county is called the County Assembly, with Ward Representatives (WR) each serving a ward as their constituency. The 2010 Constitution mandates that all elected bodies in Kenya contain at least one-third female representation (Brownsell and Gatabaki, 2013). As such, in counties that do not achieve this one-third threshold via elections (all of them in 2013), a number of Members of the County Assembly (MCAs) are to be appointed by the leading party (National Council for Law Reporting, 2012). MCAs are voting members of the County Assembly but are not representatives of specific wards.

The division of power between the national and county governments is an essential issue to understanding service provision in modern Kenya. Improving the

equitability of service provision was a major goal of devolution (Ghai, 2008). The federal government has maintained control over policies of national concern (such as national defense), whereas the county governments now control local service provision (such as public health). Each county is given an allocation of the national budget, and can allocate it at their discretion. The intention was explicitly to improve service delivery across the country through a couple of mechanisms. First, the allocation of the budget guaranteed that each region of the country receive *at least something*; whereas before, certain regions felt as though they were being neglected. Secondly, the expectation is that local politicians can better serve the needs of their people than a centralized bureaucracy because they know their own people's needs (Ahmad et al., 2005; Ahmad and Brosio, 2009; Mehrotra, 2006). Each locality has different needs and priorities; for instance, one village's greatest need may be access to clean water while another locality may have clean water but no school. An entity attempting to organize the distribution of resources to the entire country is unlikely to be able to manage each of these intricate needs. The theory supporting devolution is that local politicians know their constituents' needs and will have the resources to deliver those needs directly.

The intention of devolution was to give the power of decision-making to local politicians. As such, the Kenyan Ministry of Health (MoH) lost some decision-making power. The mandate of the Kenyan Ministry of Health is now limited to "health policy, health regulation, national referral health facilities [the two national hospitals], capacity building, and technical assistance to counties" (Ministry of Health, 2016). As such, the MoH no longer carries out the implementation of service delivery such as allocating medications across the country. Rather, each county now has its own

Ministry of Health. In practice, many counties (including Kisii and Homa Bay, which much of this dissertation focuses on) have chosen to devolve decision-making about health spending to representatives of each ward rather than ministry technocrats. In many counties, the County Ministry of Health uses the health budget to pay health workers their salaries, but then give the remainder of the health budget to the politicians as discretionary health spending.⁸ In a private conversation at a health conference in Nairobi, a Kenyan Ministry of Health official informed me that most Ministry of Health workers are deeply disturbed by this decision: stating that the government had given the power to make health decisions to politicians who know nothing about health, rather than let the experts at the ministry make them. Putting aside their perceived lack of medical knowledge, politicians are incentivized (by nature of their elected positions) to provide different services than a professional civil service.

1.3 Research Linking Child Health with Democratic Governance

Conventional wisdom states that health services (such as ORS) should be more available in democracies than non-democracies (McGuire, 2010). This is expected because elections enable voters to hold politicians accountable for service delivery. This is one mechanism by which proponents of democracy explain that citizens in democracies live longer. A number of scholarly projects show a strong statistical correlation between democracy and child health. (Besley and Kudamatsu,

⁸Information about health budget policy in the counties was provided in interviews with local politicians conducted by myself. Further information about these interviews and this specific policy is provided in Chapter 6.

2006). Navia and Zweifel (2003) show that democracy has an independent effect on decreasing infant mortality. Lower infant mortality rates then make lower birthrates a more rational decision (as parents can anticipate that a higher percentage of their children will survive, they can afford to decrease the number of children that they have). The lower fertility rate then indirectly causes even better health outcomes. Navia and Zweifel (2003) find that the infant mortality rate in democracies is 22.6 deaths per thousand live births, whereas it is 58.8 deaths per thousand live births in non-democracies. These authors estimate that the independent effect of democracy on infant mortality is five per thousand live births. This means that “five out of every thousand newborns will die *only* and needlessly because the land of their birth is not democratically governed”. The authors hypothesize (quoting Amartya Sen) that democracies better provide for children because more women in democracies use contraception and democracies have higher levels of social spending.

What are the causal mechanisms that lead democracies to promote better child health? Diaz-Cayeros et al. (2010) discuss a number of mechanisms through which democracy can improve the health of a nation’s children, including stronger checks and balances, increased electoral competition, decentralization, and women’s empowerment. Lake and Baum (2001) find that democracies have fewer infant mortalities because they provide better access to safe water and immunizations. Besley and Kudamatsu (2006) postulate that “health policy interventions are superior in democracies”, showing that democracies have 15 percent more access to sanitation and 11 percent more access to clean water than permanent autocracies. McGuire (2010) argues that democracies provide better health services because they are more likely to provide inexpensive health services than non-democracies. This

dissertation is going to focus on one country that is not providing the inexpensive services that McGuire is referring to: namely the delivery of ORS in Kenya.

Kudamatsu (2012) shows that infant mortality fell by 1.2 percentage points in states that democratized after the Cold War. Kudamatsu postulates that democracies are more prone to adopt policies that directly target the improvement of maternal and child health. In particular, Kudamatsu shows that the decrease in infant mortality may largely be explained by increases in births attended by a skilled professional, exclusive breastfeeding, and access to oral rehydration solution.

Other scholars have focused on which conditions enable governments to improve health outcomes. These articles provide rigorous support for intuitive findings. Scholars have found that political enfranchisement, political competition, greater information, and better governance all lead to improved health outcomes.

Giving people the right to vote improves representativeness and accountability. Historically, many of the people whom were denied the right to vote were those that most suffered from poor health (the impoverished and less educated) or who were socially held responsible for caring for children's health (women). Fujiwara (2015) shows that health outcomes improve when poor people are given the right to vote. In an experiment in Brazil, Fujiwara shows that enfranchisement of the poor and the uneducated lead to more health policies and better health outcomes. This is an intuitive finding; the poor and uneducated are more likely to vote for health policies as they bear a disproportionate percentage of the burden of disease. Specifically, Fujiwara shows that the enfranchisement of less educated voters increases health's share of the budget by 3.7 percentage points, raises expenditure on health over an 8 year period by over 50 percent, increases pre-natal visits by 7 percentage points, and

decreases low-weight births by 0.4 percentage points.

Using the United States as his example, Miller (2008) shows that the enfranchisement of women reduces child mortality by 8 to 15 percent. For children ages one through four, mortality rates decrease a whopping 72 percent after women receive the right to vote. In Miller's example of the United States, enfranchising women led to significant decreases in mortality from specific diseases (diarrhea 11 percent, meningitis 23 percent, and diphtheria 24 percent). As women become a major faction of the electorate in any country, politicians vastly increase health spending and promote improved education on health. One explanation for this is that women are charged with the majority of child rearing responsibilities in many cultures. As women are given the vote, they are given the voice to express what services are most needed and the power to hold politicians accountable for those services.

Diaz-Cayeros et al. (2010) argue that "the most important channel through which democratization affects children's survival is through the design of better social policies." Furthermore, "the most important effect of the shift in social policy was to empower women and households through well-targeted transfers to demand greater effectiveness from the state" (Diaz-Cayeros et al., 2010).

Democratic provision of health services is also improved via increased political competition. Increased political competition increases the accountability of politicians (Gottlieb, 2014). Politicians in perfectly safe seats need not worry about being thrown out of office (tautologically). Thus, as a politician's likelihood of being fired for doing a poor job increases, so does the likelihood that he will act in good faith. Using evidence from Mali, Gottlieb (2014) shows that less government services are provided

when parties collude rather than compete.

As further evidence of the benefits of political competition, Hicken et al. (2015) suggest that nationalized party systems are more likely to equally distribute goods. They show that fragmented party systems, systems in which each party is largely tied to a specific region, leads to an oversupply of pork barrel projects and an undersupply of nationally beneficial policies. More specifically, they show that countries with parties that represent regions have lower levels of immunization of children and higher levels of infant mortality. Governments deliver services to a wider net of people when parties must compete directly with one another for swing votes. In systems with regional parties, citizens of particular regions may have successful outcomes, but usually at the detriment of citizens in other regions.

Health service provision is also improved when citizens have access to information about their politicians' responsibilities and performances. Khemani (2006) suggests that "providing citizens with greater information about the resources and responsibilities of their local representatives" will "strengthen local accountability [and improve] delivery of basic services." "Fosu and Ryan (2004) reach the same conclusion about the centrality of information dissemination and disclosure in policy interventions to improve accountability, based on their reading of more general principal-agent models of service delivery" (Khemani, 2006). The idea is that voters will not hold their politicians responsible for poor performance on issues that they do not know politicians are responsible for providing. Voters cannot base their vote on information they do not have.

Gottlieb (2014) shows that opposition parties are necessary in disseminating information about incumbent performance. Lead opponents are most poised to inform

the public about which services incumbents failed to deliver. This argument combines the ideas that political competition and information equip voters to demand better health services.

Lastly, it is necessary to promote a professional civil service within the health sector. Inadequate payment and non-payment of public health employees is rampant in developing countries. Schneider et al. (2006) shows that unpaid health workers are not motivated to do their best work. Worse yet, lack of payment incentivizes health workers to engage in predatory behavior such as charging patients for services or supplies that are meant to be free or skipping work. Governments with professional civil services are more likely to prevent and police these predatory behaviors.

Khemani (2006) finds that a lack of accountability in governance leads to increased nonpayment of health workers in Nigeria. The lack of accountability in governance leads to leakages of funds, which then never reach their intended targets. Khemani shows a correlation with the number of months that staff are not paid and the likelihood that the facility is unclean and out of stock of essential drugs. While Khemani notes that his study cannot reach conclusions about the benefits of decentralization, he can conclude that strengthening accountability will strengthen a locality's health service delivery.

Many democracies continue to have poor health outcomes for children. The following works offer insights as to why democratic politics may not lead to the positive outcomes that we expect. The first, and most intuitive, explanation is that many democracies still suffer from progress-impeding corruption. The other theories are more counterintuitive and exciting. One argument is that beneficial policies can unintentionally create negative externalities for health. Secondly, and more

interesting to me, is that election minded politicians are incentivized to deny the severity of disease burdens in their area and exaggerate the benefits of their health programs.

Davis (2004) describes the prevalence of corruption in the water and sanitation sectors of southeast Asia. He also shows how various methods of corruption can impact health, including “petty corruption, bribery and kickbacks in contracting, and the market for transfers”. Citizens in these countries often have to pay small bribes to get service-work completed, including making repairs and establishing new water lines. This creates an environment in which the poorest of society (thus the most vulnerable to disease) are the least likely to get access to clean water and sanitation; compounding the problem of disease from water-borne illnesses. Corruption and kickbacks in contracting means that less money is being spent on projects than is necessary, with contractors taking shortcuts in terms of material and quality. The loss in quality hampers the cleanliness of water and adequacy of the sanitation system; thus endangering health.

Another reason democracies might fail to improve health is that well-intended policies could have negative externalities on health. For instance, in Malawi, it is strongly encouraged that pregnant women seeking antenatal care be tested for HIV (for good reason). Angotti et al. (2011) show that Malawians believe that getting tested for HIV is a *requirement* to receive antenatal services, rather than a strong recommendation. Malawians believe that refusing the HIV test disqualifies a mother from receiving antenatal care. Thus, women who do not want to be tested, or wives of men who do not want them to be tested, may opt not to receive antenatal care. This decision is harmful for both mother and child.

Cohen et al. (2014) investigate a negative externality of subsidizing medication. The intentions of subsidizing medication are apparently good, allowing access to medication for individuals who would not otherwise afford it. However, these authors show that subsidizing life-saving antimalarials (ACTs) led to the over-provision of the good, often being prescribed to patients whom were not suffering from malaria. Such practices can lead to shortages of the drug and thus a lack of treatment for people who do have the disease.

In South Africa, the government privatized the provisioning of water. The idea was that the water company would be able to recover its costs, and then setup access to water in other areas. This “cost recovery” program unintentionally led to a cholera outbreak in which 120,000 people were infected and 265 died (Pauw, 2003). While the South African government was hoping to increase citizens’ access to water, they did not foresee that so few people would be able to pay for the water they used. As a result, millions of people cut off access to their piped water and reverted to using less safe sources of water. After the outbreak of cholera, the government spent millions to control the epidemic; ultimately losing resources because of a program intended to raise revenue.

Electoral pressures may also incentivize politicians *not* to directly address health crises. Democratically elected politicians face incentives to deny crises in their constituencies, lest they be blamed for letting something tragic occur on their watch. At the turn of the twentieth century in the U.S. South, politicians denied that a Pellagra epidemic was the result of malnutrition, as poverty and malnutrition are embarrassing social problems (Bollet, 1992). Bollet links this denial to what happened in the U.S. during the introduction of the AIDS epidemic in the 1980s. Putzel (2004)

shows that before Museveni took the lead in combatting HIV in Uganda, Uganda's Permanent Representative to the United Nations vehemently denied reports of a widespread AIDS epidemic.

Democratically elected politicians also face incentives to misrepresent the success of their health programs. Banerji (1990) shows that politicians in India claimed that an immunization program was wildly successful and cost effective without any evidence in support whatsoever. In fact, available evidence suggests that this specific immunization program was rather *unsuccessful*. He states that this provides "evidence of ignorance of the decision-makers about basic epidemiological and administrative aspects of the immunization program. It is not only unscientific to make such irresponsible claims: it is downright unethical and immoral." In the following quote, Banerji accuses the "unholy alliance" of domestic governments and international organizations of intentionally spreading misinformation about health:

It is shuddering to find that even in the eighth decade of the current century, an unholy alliance of national and international power brokers could impose their will on hundreds of millions of human beings living in the poor countries of the world - and make them forget all that happened at Alma Ata in 1978. For the poor the struggle for health is a long and grinding one. One can thus discern a disturbing chain of disinformation, distortion, and cheap propaganda in a bid to sell the immunization program, both globally and in India. (Banerji, 1990)

Politicians are likely to blame neighboring countries for regional epidemics. Labonte (1992) shows how various Latin American countries accused one another of having severe cholera epidemics while denying their own epidemics at home; or acknowledge epidemics but blame it on nationals of the nearest country. The author points out that the reciprocal finger pointing is reminiscent of syphilis in medieval Europe where "the English called it the French Disease while the French called it

the British Pox”. Politicians attempt to attribute a regional disease to a particular country (other than their own) to avoid losses in tourism and trade that result from major epidemics. For example, ministers in Argentina boasted that their vegetables were safe to eat despite evidence that the same vegetables were largely fueling a major cholera epidemic. A similar thing happened in Peru where ministers from coastal states insisted that the fish from their areas were safe to eat (Labonte, 1992).

Zawahri et al. (2011) show that politicians use statistics to misrepresent their efforts to improve the health of their constituents. The international standard for measuring “access to improved water sources” is fraught with bias, and is actually a poor indicator of access to clean water. “Improved water sources” include “piped household water, public standpipes/taps, boreholes, protected wells, protected springs and rainwater collection”, many of which could easily be contaminated with disease. “Unimproved sources” include unprotected wells or springs, tanker truck or small cart, or surface water. Bottled water is considered an unimproved source of water; illustrating that the status of “improved” is not synonymous with “clean”.

Furthermore, a percentage of the population having access to improved water sources does not imply that the same percentage of people can afford that water. Thus, many people who are considered to have access to improved water sources are likely to be drinking/using water from unimproved sources such as surface water.

However, relying on “improved access” as a measure is beneficial to politicians, as they can use the media to portray a more successful image of themselves. In fact, the Millennium Development Goals (MDGs) regarding access to improved water sources “have inadvertently provided governments with perverse incentives, to prioritize reporting of aggregate coverage rates rather than investing

in more adequate metrics to gauge quality, accessibility and affordability of services” (Zawahri et al., 2011).

At times, politicians may refuse to enact broad public health policies altogether as doing so would represent an admission of guilt for the problem. Barnes (2007) argues that governments address health problems by promoting behavioral changes by the citizens because that puts the blame for the problem on the citizens themselves. For instance, a government may address diarrheal mortality by promoting handwashing rather than provide new sanitation facilities; the effect of which is to suggest that children die because families do not wash their hands after defecation, not because they did not have a proper place to defecate.

1.4 Extant Explanations of Diarrheal Mortality in Kenya

This dissertation investigates why children continue to die from diarrhea in Kenya. Despite having devolved service delivery to competitively elected local officials, child mortality remains high. Previous explanations of these deaths place the majority of blame on Kenyan parents. Numerous scholars of public health (Goel et al., 1996; Othero et al., 2008; Olson et al., 2011; Omore et al., 2013; Zwisler et al., 2013) note that diarrheal mortality remains high because of low uptake of ORS (this is almost tautologically true, as ORS is effective in preventing mortality 93 percent of the time). These reports speculate that the causal mechanism for low uptake is “low demand”, that parents deliberately neglect administering oral rehydration solution to their children.

Previous literature also suggests that Kenyan parents commonly practice ill-advised treatments of diarrhea. First, the literature suggests that a large percentage of Kenyans lack the knowledge of what causes diarrhea, commonly believing that children fall ill after someone curses them. Second, they state that parents restrict their children's food and liquid intake when suffering from diarrhea. Lastly, they report that parents regularly administer antidiarrheals to sick children. Because of the body's need to expel the illness, it is dangerous to give antidiarrheals to children. Antidiarrheals often *increase* a child's odds of dying from diarrhea, as the deadly organisms remain in his body. Unfortunately, many mothers around the world report that stopping symptoms is their primary goal when their child falls ill with diarrhea, and therefore demand antidiarrheals (Seidel, 2005). In the most recent Demographic and Health Surveys (DHS), 8.5 percent of Kenyan mothers admitted to administering antidiarrheals to their children.

That these authors believe that Kenyans are engaging in adverse behaviors is evidenced by their calls for behavioral changes to improve child health. These beliefs validate politicians' decision to not expend resources towards providing the services that enable proper prevention and treatment, as those services would necessarily go unused. Barnes (2007) explains that politicians seize the opportunity to promote behavioral interventions, as it takes the blame off of them. Proposing that a change in citizens' behavior is the solution to the problem implies that the cause of the problem is related to the citizens' behavior. When politicians acknowledge that the solution to the problem is for them to change their actions (such as by more adequately procuring medication), they are tacitly accepting responsibility.

1.5 My Approach

In contrast to the existing literature, I argue that diarrheal mortality in Kenya is primarily caused by a failure of supply. I will suggest that politicians are rationally providing white elephants rather than stocking existing dispensaries.

The remainder of this dissertation will unfold into two parts. Part one focuses on the supply and demand of ORS in Kenya; where I will suggest that Kenyans have high demand for ORS, but the government has failed to provide it. In Chapter 2, I will show that, contrary to assertions of previous literature, Kenyans are highly knowledgeable about diarrheal diseases and use ORS when it is available to them. I show this using an original survey of more than 1,000 respondents. These respondents indicate that low ORS use in Kenya is the result of a failure of supply, not a failure of demand. Approximately one-third of respondents state that they have personally experienced traveling to a dispensary only to be told that the dispensary was completely out of stock of ORS.

To follow up on the concerns raised from the above survey, I conduct an independent audit of the Kenyan Ministry of Health dispensary system. In a survey of over 400 dispensaries, I show that oral rehydration solution is not available in 40 percent of Kenyan dispensaries. This survey also indicates the prevalence of stockouts of a majority of essential medicines in Kenya. These results are presented in Chapter 3.

Part two of this dissertation addresses two potential mechanisms for why politicians do not provide ORS in Kenya. One possible reason is that voters do not consider the issue of health when they determine their vote; thus not incentivizing politicians to properly provide for health, a belief that I dismiss in Chapter 4. I

demonstrate that health is a salient issue in Kenyan elections. I do this by showing that Kenyans respond to candidates' pledges to improve health. The data for Chapter 4 comes from the 2014 survey of Kenyan constituents.

In Chapter 5, I provide suggestive evidence that elections establish perverse incentives for politicians when it comes to providing for health. Politicians know that voters prefer a candidate who cares about the health sector, and thus deliver services that signal their dedication to improving health. Politicians invest funds in constructing new health facilities because buildings are visible to a large set of their constituency and thus more successfully signal their dedication to health. Politicians do not spend an adequate amount of funding on medicines because only those people who get sick will see the good, and even then, they do not frequently associate the delivery of the good with their local representative. Data for Chapter 5 come from content analysis of every newspaper article about health from Kenya's two leading newspapers for an 18-month period and interviews with 16 local politicians. Chapter 6 will conclude the dissertation.

1.6 Conclusion

I conclude that diarrheal mortality in Kenya is the result of a failure of supply; specifically, the government is undersupplying ORS to its Ministry of Health dispensaries. Why are politicians not providing adequate stocks of ORS? I argue that politicians gain more benefits from providing buildings (even as unfinished white elephants) than they do for providing medicines. As in any country, voters do not have perfect information about what a politician has provided during her tenure. Given this imperfect information environment, politicians provide services

that send the strongest signal of their dedication to constituents' health. New buildings send a particularly strong signal because every person in the community can see that it is being built. Furthermore, politicians can easily claim credit for the delivery of a building by painting their name on the exterior. Despite the high impact that ORS would have, far fewer voters come into contact with it and politicians do not write their name on it. Therefore, politicians rationally spend their discretionary health budget on high-cost, low-impact services such as buildings rather than low-cost, high-impact services such as ORS.

Chapter 2

Demand for ORS

2.1 Introduction

The intention of this chapter is to show that child mortality from diarrhea in Kenya is not explained by a lack of demand for oral rehydration solution (ORS). Kenyan parents administer ORS to their children when it is available. However, ORS is frequently not available. I argue that the undersupply of ORS is a political failure rather than a public health failure.

In order to show that diarrheal mortality is caused by a failure of supply, I must show that Kenyans use ORS when it is available. If Kenyan parents neglect to acquire and administer ORS when it is available, it would be inefficient for politicians to expend resources guaranteeing its delivery. The conventional belief in public health literature and aid organizations on the ground is that Kenyan parents choose *not* to administer ORS to their diarrhea-affected children. The belief is that there is a prevalent *lack of demand* for ORS. A September 2015 report from the Kenyan Ministry of Health and Amref reports that “access to correct information on home

management of childhood diarrhea and to ORS and Zinc at community level remains one of the bottlenecks to the effective implementation of this life saving commodity” (Ministry of Health and Amref, 2015). This same Ministry of Health and Amref report cites the 2010 round of the Demographic and Health Surveys that only 39 percent of children with diarrhea receive ORS despite 80 percent of mothers knowing about the treatment. This is an official Ministry of Health statement that Kenyans do not administer ORS to their children despite knowing that they should. While the report acknowledges an “erratic supply of ORS in the health facilities” they emphasize that “not all children with diarrhoea seek treatment at health facilities” and problems of “knowledge and practices in communities”. The report’s emphasis on solving the child mortality crisis falls on improving constituent behavior rather than systemic changes in service delivery. The implication is that the majority of blame for child mortality belongs to constituents rather than government officials.

Another commonly held belief is that Kenyan parents neglect to take reasonable measures to prevent onset of diarrhea in their children. For instance, this quote from The Foundation for International Cardiac and Children’s Services notes their perception of unhealthy practices in Kenya:

Diarrhea poses a huge risk for slum dwellers because of the lack of proper sanitation and hygiene. Most slum dwellers are unemployed and poverty is a major problem. This is why the inhabitants of the slums run indecent businesses to earn a living such as roasting corn, selling food stuffs such as chips, mandazis, samosas, prostitution, and even gambling. The methods used to prepare these foods are poor and very unhygienic. People usually cook the food beside the roadside where dust, flies, sewages and all kinds of dirt surround them. Most people tend to buy these kinds of foods because they are cheap and they forget the low hygienic measures carried out when preparing the food. Rarely will you ever see anyone wash their hands before preparing food. (Harris, 2011)

The World Bank released a study in 2009 about poor handwashing practices

in Kenya and the need for better education programs (World Bank, 2009). Politicians also rely on blaming citizen behavior for the spread of disease. In July 2015, Member of the County Assembly Farida Salim was quoted as saying that “the sanitation uptake status of the county is dismal. Out of 1,490 villages, only 354 are progressing towards achieving an ODF¹ status” (Oudia, 2015). Hon. Salim’s comments focus on uptake rather than provision. In a March 2015 article from The Standard, “Tabaka Ward Rep Daniel Apeo said a number of residents in his area were using dirty water for domestic use, making it difficult to prevent the disease from spreading” (Gatonye, 2015). Yet again, this is an example of a politician focusing on what behaviors citizens should change to curb disease rather than what the government should provide.

The purpose of this chapter is to investigate the knowledge and behaviors of Kenyan families regarding diarrheal disease. I will show that Kenyans know how to prevent and treat diarrhea in their children, and do so when ORS is made available to them. Demand for ORS certainly exists. This conclusion suggests that behavioral standards are already high in Kenya, and the solution to diarrheal mortality rests in changes of service provision from the government.

2.2 Diarrheal Diseases Causes and Interventions

The purpose of this section is to provide the reader with information about diarrhea’s causes and the range of treatments available. As I am intending to show that Kenyans understand the causes of diarrhea, I will first explain the most common vectors of the illness: poor hygiene, contaminated water, and contaminated food. As the primary purpose of this chapter is to demonstrate that Kenyans

¹ODF stands for Open Defecation Free.

properly care for their children during bouts of diarrhea, I will differentiate acceptable and unacceptable practices as defined by the current consensus in medical research, showing that proper treatment is to increase the child's food and liquid intake while also administering oral rehydration solution. I will show that the conventional wisdom in academia is that Kenyans are woefully ignorant of this information. I will take a strong stance against this viewpoint, demonstrating that Kenyans know how to best care for their children.

Diarrheal infections can be caused by bacteria, viruses, or parasites. A person contracts a diarrheal disease by orally ingesting contaminated fecal matter, typically through consuming unclean food or water or failing to wash their hands. Parents can prevent the onset of diarrhea by ensuring that their children's hands, water, and food are clean. Children who die from diarrheal diseases almost always die as a result of dehydration. As such, the key to treating an infected patient is to keep them well hydrated and nourished (World Health Organization, 2005). Parents can protect their children's health by taking proper preventive measures, and by administering the proper treatment when their child becomes ill. Oral rehydration solution is the globally agreed upon gold standard in rehydrating and renourishing children afflicted with diarrhea (World Health Organization, 2016a).

As diarrheal disease is spread through contaminated fecal matter, one can prevent diarrheal onset by preventing the ingestion of bacteria. One of the most simple ways to prevent contagion is through proper handwashing with soap and water. Campaigns to promote handwashing are common in Kenya, as are campaigns in schools (UNICEF, 2015).

Contaminated water is the most common way for a child to become ill with

diarrhea. Most Kenyans do not have access to treated water, and are thus responsible for treating water on their own. The most common ways to treat drinking water are to boil it or treat it with chlorine tablets/drops (Kols, 2010).

Lastly, spoiled or contaminated food is likely to cause diarrhea in children. Parents can protect their children by not buying food that has been improperly or not hygienically prepared, properly storing food stuffs at safe temperatures and away from insects, and thoroughly cooking all meals. The Ministry of Health conveyed these lessons to Kenyan citizens by taking out a full two page ad in The Standard newspaper on April 7, 2015 (The Standard, 2015).

As all of these preventive measures are relatively straightforward, knowledge of diarrhea's causes is the truest preventive measure. Public health scholarship and many practitioners on the ground report that Kenyans severely lack knowledge of diarrhea's common causes. If true, then ignorance about the causes of diarrhea might explain its prevalence. One goal of this chapter is therefore to evaluate parents' knowledge of preventive methods.

The most common treatments for childhood diarrhea are oral rehydration solution (ORS), antidiarrheals, antibiotics, and herbal medications. ORS is globally recognized as the gold standard of treatment (World Health Organization, 2016a). The best way to treat a child who is ill with diarrhea is to keep him well hydrated while allowing the body to flush out the illness, which is precisely what ORS does. On the other hand, antidiarrheals prevent the body from flushing out the illness by stopping the diarrhea from occurring. Antidiarrheals often *increase* a child's odds of dying from diarrhea by keeping the deadly organisms in the body. The notion that stopping the symptom of diarrhea is a *bad* thing is counterintuitive, which is why

many scholars speculate that Kenyans prefer to use antidiarrheals more than ORS. This is another factor I will evaluate in this chapter.

The gold standard of treatment for a child with diarrhea is to give her oral rehydration solution (ORS), or a homemade version referred to as oral rehydration therapy (ORT). ORS is a combination of salt and sugar mixed in water that is given to a child to replace fluids and electrolytes.² ORS prevents the child from dying of dehydration or malnutrition while the illness “runs its course”, flushing the bacteria/virus from the body. Kenya’s Ministry of Public Health and Sanitation (MoPS) mandates that all children with diarrhea receive ORS.

The mainstay of therapy to correct dehydration will be low osmolarity ORS. All children with diarrhoea should be given ORS. (Ministry of Public Health and Sanitation, 2010)

MoPS policy guidelines do not specify a level of severity, duration, or type of diarrhea that warrants ORS usage. Rather, parents are advised to give children ORS in all instances of diarrhea.

If ORS is not available, the best treatment for diarrhea is a homemade version of ORS (referred to as either oral rehydration therapy (ORT) or sugar and salt solution (SSS)). ORT is unpopular in Kenya for a number of reasons. First, the government has commanded that ORS be provided for free and people resent buying supplies for something they should receive free of charge. Secondly, the ingredients for ORT (mainly sugar and salt) cost a significant amount of money because they are only sold in bulk. Families also report not buying large quantities of sugar because it is a difficult investment to protect; without proper storage, bags of sugar become infested with bugs (Blum et al., 2011). Lastly, ORT tastes significantly worse than ORS. ORS

²In recent years, ORS with the addition of zinc has become the new gold standard. However, zinc use continues to be exceptionally low globally, and it is thus not discussed in this chapter.

is professionally manufactured with an orange flavor; ORT is salt water with sugar added.

The undisputed *wrong* treatment for children with diarrhea is to give him antidiarrheal (antimotility) drugs. By stopping the symptom of diarrhea, these drugs effectively keep the bacteria/viruses inside the child's body and allow them to multiply, thus creating a dangerous situation that could compromise the child's organs. The MoPS policy guidelines for diarrhea clearly state that "anti-diarrhoeal drugs and anti-emetics³ will not be used. None have proven practical value and some are dangerous" (Ministry of Public Health and Sanitation, 2010).

Another form of treatment that is almost always improper is antibiotics. Antibiotics are only appropriate in the event that the diarrhea is specifically classified as shigella dysentery or cholera. "In diarrhoea of any other aetiology antibiotics are of no practical value and should not be given" (Ministry of Public Health and Sanitation, 2010). Despite these guidelines, prescription of antibiotics is common in children with the more common forms of diarrhea. Improper prescription and use of antibiotics have led to increasingly antibiotic resistant strains of Shigella (Sack et al., 2001). As is stated in the MoPS guidelines, antibiotics offer no positive value when given to a child suffering from another strain of diarrhea such as rotavirus or viral gastroenteritis.

The last unadvised set of treatments is "herbal remedies". Because "herbal remedies" is a catchall statement for various types of herbs, their positive/negative effects are herb specific. Many times herbal remedies are advised against because there is a believed correlation between using herbal remedies and believing that

³Prevents vomiting

ORS/ORT are bad things that should be avoided (Olson et al., 2011). In addition, some herbal remedies cause constipation which is dangerous for the same reasons as antidiarrheals. Lastly, some herbal medications cause vomiting, which heightens the risk for dehydration or malnutrition.

When a child is ill with diarrhea, it is vital that she drink more liquids than she does on an average day. As the body is rapidly losing water, maintaining hydration is key to successful recovery. It is also strongly advised to keep the child's food intake to average or increase it, as the body is also losing nourishment (World Health Organization, 2005). Both of these things likely seem counterintuitive when one fears that food/liquid intake will cause another loose stool.

How knowledgeable is the average Kenyan citizen about different types of treatment for children with diarrhea? Are they aware that ORS is the gold standard of treatment and that antidiarrheal agents should never be used? Are they knowledgeable that poor hygiene, contaminated water, and contaminated foods cause diarrhea? The next section will relay the findings of six public health publications that report Kenyans do not know these things and do not administer ORS to their children.

2.3 Previous Literature on the Treatment of Diarrhea in Kenya

Recent (2007-2013) publications in public health journals consistently show Kenyans' low uptake of ORS.⁴ Most also show empirically that Kenyans are

⁴To the best of my knowledge, the cited articles constitute an exhaustive list of peer-reviewed publications that report levels of ORS use in Kenya.

knowledgeable of ORS. These authors speculate that the gap between knowledge and administration of ORS can be explained by willful inaction; that parents choose not to administer ORS to their children. In other words, extant literature in public health regularly concludes that Kenyans lack a demand for ORS. All of the articles that will be cited except one argue that the solution to improving mortality from diarrhea in Kenya rests in causing a behavioral change in parents. This line of thought suggests that the blame for the high mortality rate from diarrheal disease exists mostly with parents; if the solution is to change the parents, it is only sensible that the problem is the parents. The argument inherently suggests that parents would neglect to use ORS even if it were widely available in all dispensaries. If these claims prove true, they provide a defense for Kenyan politicians' decision to not expend more resources towards the procurement of ORS, as providing a resource that would ultimately go unused would effectively waste that money.

Previous literature suggests that high child mortality in Kenya is due to parents failing their children in the following ways: 1) they do not understand the severity and causes of diarrhea, 2) they do not use ORS, and 3) they prefer alternative treatments which are actually harmful to children. In this literature review, I will relay the results of several articles that speak to one or more of these claims. My research tests the validity of these claims as well as different causal mechanisms.

First, previous scholarship claims that Kenyans do not realize how severe a burden diarrhea poses. Date et al. (2013) claim that "awareness of the need to seek care immediately for severe diarrhea was relatively low" in western Kenya. Date and colleagues conducted surveys of 358 constituents of six cholera infected areas in western Kenya (Migori, Kisumu East, Rachuonyo, Siaya, Nyando, and Bungoma) and

six control areas in the same region that had not been affected by cholera.⁵ Date and coauthors state that their results “may indicate that the disease is viewed as a routine occurrence in the population” suggesting that *some* Kenyans feel that diarrhea is an expected part of everyday life for which treatment is unnecessary. If this is true, politicians face no incentive to provide diarrheal treatments, as they will go unused.⁶

Other scholars claim that Kenyans lack knowledge of the causes of diarrhea; claiming that many consider the illness to result from evil eye, witchcraft, false teeth, or bad breast milk (Othero et al., 2008; Blum et al., 2011). Blum and coauthors surveyed a total of 45 people in Asembo (in former Nyanza province) and Kibera (the largest slum in the capital of Nairobi). Of these 45 interviews, only 25 were of people who had reported engaging in negative health behaviors and they were selected *because* of these negative behaviors which limits the authors’ claims to generalizability. Othero et al. (2008) claim that the percentage of Kenyans who believe that these are the causes of diarrhea is high: “perceived causes of diarrhea were: ‘unclean water 524 (54.9 percent), bad eye 464 (50.0 percent), false teeth 423 (45.6 percent) and breast milk 331(35.8 percent).’”

Reports that Kenyans believe in such false causes of disease inadvertently promote a stereotype of Africans as ignorant or “backward”. Sadly, many politicians believe these stereotypes about their rural constituents, which could explain a belief that not providing access to treatments is justified. One example of a politician believing that child mortality is the result of parental ignorance comes from Dennis

⁵Thank you to the authors of Date et al. (2013) for sharing their survey instrument and sampling strategy to illuminate my analysis. It is because of this supplemental information that I know which treatment areas they surveyed. The supplemental information does not contain the names of the six control areas.

⁶Date and coauthors are careful to note at the end of their article that their results are not representative or generalizable to the broader Kenyan public.

Ombache, MCA from the Marani district of Kisii, who told me that:

The death of the children is [first] and mostly an issue of ignorance. [Secondly it is an issue of] lack of hygienic environments... and then you have lack of nourishment with a lot of underweight children. [Lastly], antenatal services, where they are available the mothers don't take them seriously. (Dennis Ombache)

The Hon. Ward Rep clearly links child mortality to ignorance and states that parents do not take advantage of available health services.

The citations under discussion also report that Kenyans fail to administer ORS to their diarrhea-afflicted children, preferring to give their children antidiarrheals and herbal medications. Furthermore, these articles report that Kenyans usually decrease their children's liquid intake and frequently eliminate their food intake during bouts of diarrhea.

When a child is suffering from diarrhea, proper treatment is to continue giving her food and water at her normal rate or higher (usually higher). Omore et al. (2013) and Othero et al. (2008) both report that Kenyan parents reduce their children's food/water intake to some degree. Othero and coauthors surveyed 927 caregivers of children in Nyando (an area within former Nyanza Province) and Omore and coauthors surveyed 1,043 respondents in Asembo and Gem (also areas within former Nyanza province). Figure 2.1 shows that Omore et al. (2013), Othero et al. (2008), and the most recent round of the Demographic and Health Surveys (DHS) in Kenya report that a majority of Kenyans restrict their child's liquid intake during bouts of diarrhea. The DHS are the largest health surveys in the world and are intended to be nationally representative in the countries in which they take place.⁷ Figure 2.2 shows that these articles report over a third of Kenyans giving their children no food at all

⁷Reported usage of ORS, herbal remedies, antibiotics, and antidiarrheals from six public health publications can be seen in Table A.1 in Appendix A.

during bouts of diarrhea. However, the most recent DHS in Kenya shows that only 8 percent of Kenyans restrict their children from eating food while sick with diarrhea.

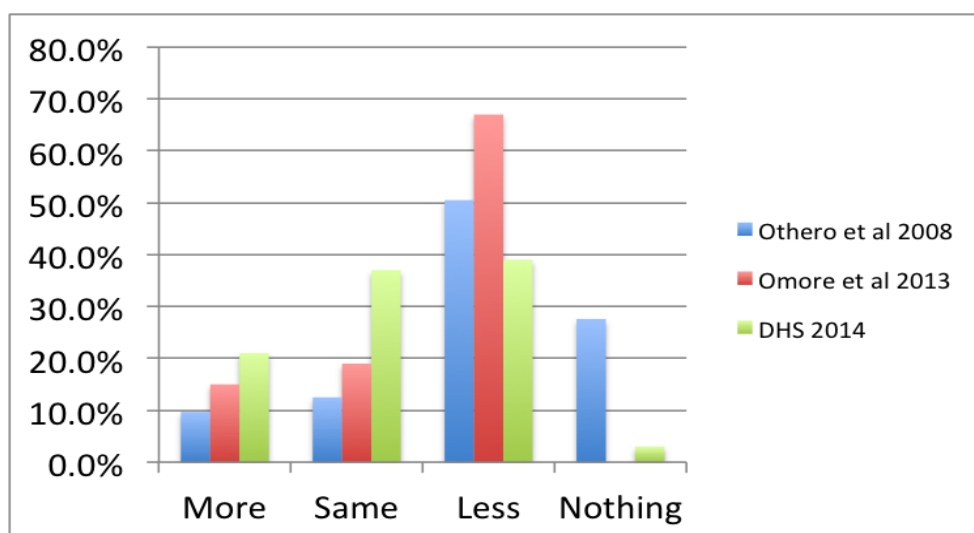


Figure 2.1: Liquid Intake When Child Has Diarrhea

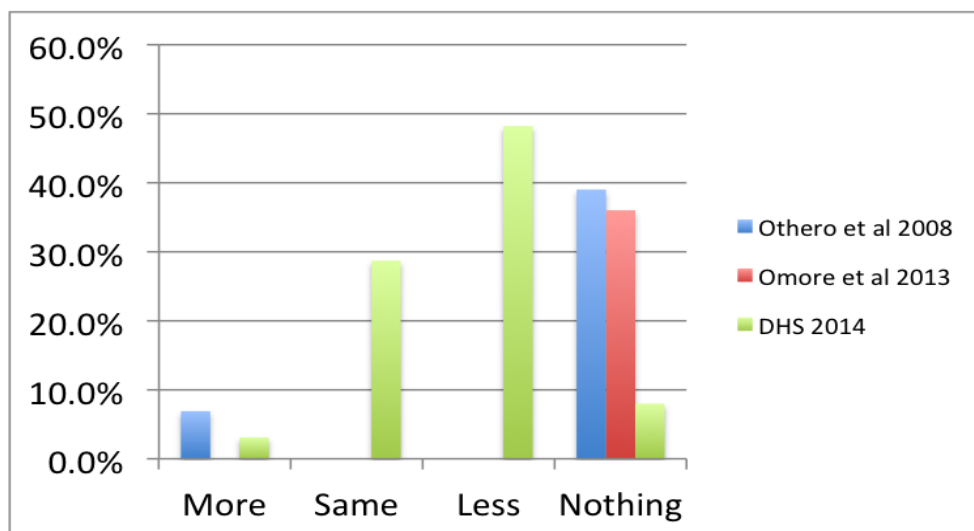


Figure 2.2: Food Intake When Child Has Diarrhea

Reports on the frequency of Kenyans that use ORS vary by author, but all report less than 59 percent uptake (most under 43 percent). It is important to note that all of these sources asked respondents if they gave their child ORS *during their*

last bout of diarrhea. One 2013 article (Omore et al., 2013) reports Kenyan ORS usage as low as 23 percent. The lowest rate of usage (13 percent) comes from Othero et al. (2008), however they asked their respondents if the child had received ORS before visiting a medical facility. They do not report results to their question about giving the child ORS at any point during the most recent bout of diarrhea. The highest reports of ORS usage come from Simpson et al. (2013) and the 2014 DHS. Simpson and coauthors surveyed 100 residents in Bungoma (a county in former Western Province). Olson et al. (2011) states that “in Kenya, where diarrhea remains the third leading cause of childhood mortality, we found that household case management of diarrhea (ORS, ORT, or continued feeding) is inadequate for a substantial proportion of children”. Olson and coauthors argue that households mismanage their children’s treatments by persistently failing to administer oral rehydration solution. Olson and coauthors surveyed 317 caregivers in Asembo (in former Nyanza province) and 389 caregivers in Kibera (the largest slum in the capital of Nairobi). Figure 2.3 shows the reported levels of ORS in Kenya from each of the articles being discussed.

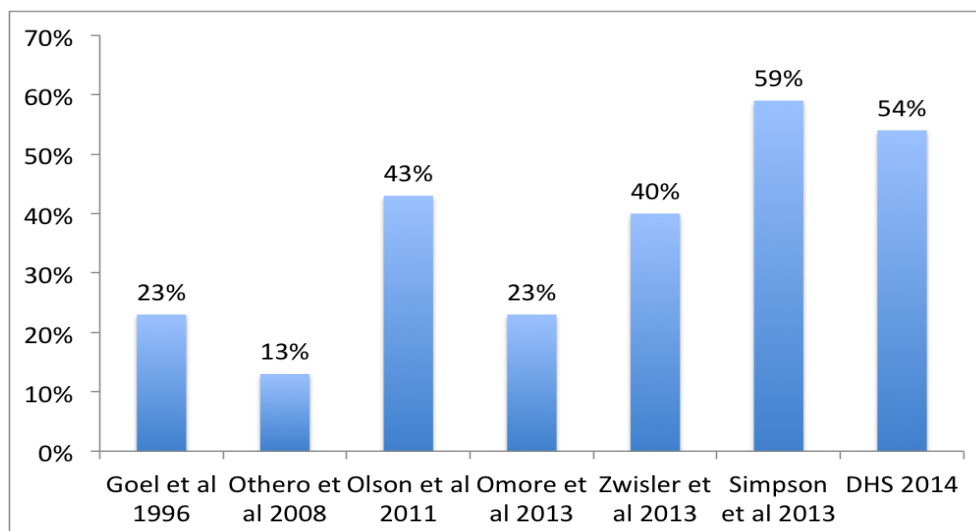


Figure 2.3: Percentage Providing ORS When Child Has Diarrhea

While the reports on usage of ORS are varied, reports are even more varied on how knowledgeable Kenyans are about ORS. Omore et al. (2013) report that 89.5 percent of Kenyans know that ORS works well for treating diarrhea. Blum et al. (2011) write that Kenyans are knowledgeable about both ORS and ORT; specifically questioning a puzzle of a decrease in uptake despite a simultaneous increase in knowledge. Date et al. (2013) report that there is high knowledge of the need to treat water before drinking (though a gap between that knowledge and practice), but also report a low knowledge of ORS. Othero et al. (2008) note that mothers in Kenya “lacked adequate knowledge on the management of diarrhea”.

The authors of the above articles explain that Kenyan parents prefer antibiotics and antidiarrheals to ORS. They prefer these ill-advised alternatives because they shorten the duration of the illness and ORS does not (Blum et al., 2011; Goel et al., 1996; Olson et al., 2011; Omore et al., 2013; Othero et al., 2008).⁸ Zwisler et al. (2013) asked respondents what the best course of treatment for diarrhea was: 55

⁸Goel et al. (1996) sent actors pretending to be parents of children with diarrhea to 91 pharmacies in Kenya; 62 in Nairobi and 29 in four unnamed rural villages.

percent said antibiotics while only 29 percent said ORS, implying a belief that ORS is ineffective. Zwisler and coauthors surveyed 1,001 respondents in Kenya (they do not report which regions of Kenya were sampled).

Kenyans might not use ORS after learning that it does not shorten the duration of diarrheal episodes. If parents who expect ORS to shorten the duration of their child's illness experience an instance where the diarrhea continues, their frustration may lead to refusal to administer ORS in the future. "Inappropriate expectations of ORS to reduce the duration or volume of diarrhea and fight infection can lead to disappointment and frustration, potentially contributing to subsequent failure to use ORS" (Olson et al., 2011).

Previous literature reports that antidiarrheal usage is high, ranging from 45 percent (Othero et al., 2008) to 81 percent (Olson et al., 2011) as shown in Figure 2.4. Omoro et al. (2013) report only that there is a "strong preference" for antidiarrheal drugs in Kenya. The 2014 DHS findings that only one percent of respondents use antidiarrheal drugs is extremely surprising. My best attempt to explain this is that their survey asks respondents if they gave their child "antimotility drugs", a synonym for antidiarrheal drug which I almost never hear or see used in Kenya outside of formal Ministry of Health (MoH) documentation. In terms of use of herbal remedies, Othero et al. (2008) reports that 7.7 percent of Kenyans give them to their children with diarrhea, whereas Olson et al. (2011) and Blum et al. (2011) report a "preference" and "strong preference" respectively.

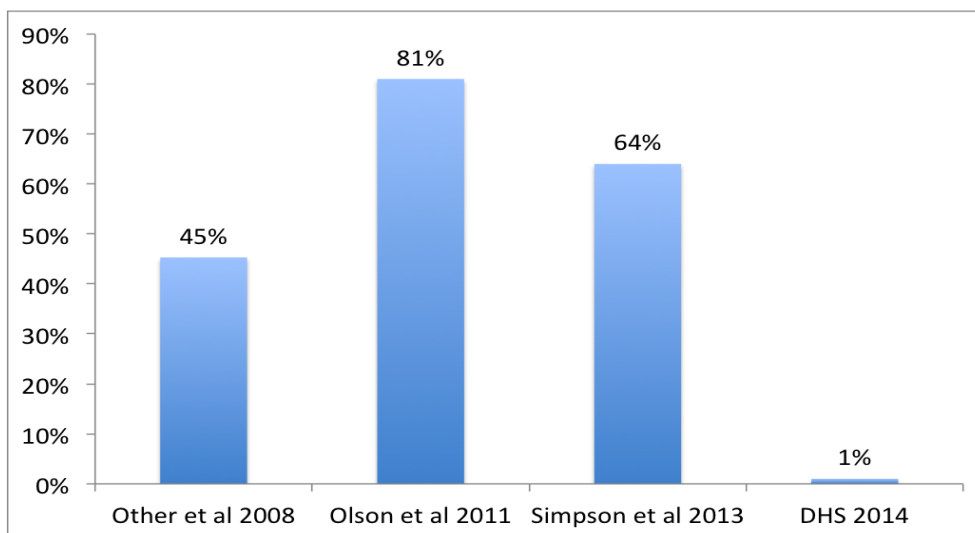


Figure 2.4: Percentage Providing Antidiarrheal When Child Has Diarrhea

When one reads the publications about treatment of childhood diarrhea in Kenya, the average Kenyan appears to treat her child's diarrhea in adverse ways. This previous literature suggests that Kenyans commonly restrict their children's food and liquid intake, deny ORS, and administer antidiarrheals. This literature also suggests that a large percentage of Kenyans lack the knowledge of what causes diarrhea, commonly believing that children fall ill after someone curses them.

That these authors believe that Kenyans are engaging in adverse behaviors is evidenced by the fact that all of them except one (Olson et al., 2011) call for behavioral changes to improve child health in Kenya. These beliefs validate politicians' decision to not expend resources towards providing the services that enable proper prevention and treatment, as those services would necessarily go unused. Barnes (2007) explains that politicians seize the opportunity to promote behavioral interventions, as it takes the blame off of them. Proposing that a change in citizens' behavior is the solution to the problem implies that the cause of the problem is related to the citizens' behavior. When politicians acknowledge that the solution to the problem is for them to change

their actions (such as by more adequately procuring medication), they are tacitly accepting responsibility.

The results from my original survey will show that demand for ORS in Kenya is significantly higher than reported by these sources. Similarly, parents are significantly more likely to increase their children's food and liquid intake during bouts of diarrhea. However, I find that antidiarrheal use and the belief that ORS is intended to shorten the duration of diarrheal episodes are still dangerously high.

2.4 Survey Methodology

In the summer of 2014, I conducted a survey of 1,006 Kenyan parents to elicit their attitudes and beliefs regarding diarrheal diseases. The study was conducted in eight counties of western Kenya.⁹¹⁰

⁹The survey instrument was written by the author, Nathan Combes, is his sole intellectual property, and can be seen in its entirety in English and Swahili in Appendix I. The survey was administered by the staff of Ipsos Limited.

¹⁰This project received exemption by the UCSD Human Research Protections Program. The letter from UCSD's HRPP can be seen in Appendix L.



Figure 2.5: Former Provinces of Western and Nyanza

The survey was conducted between August 20th and September 3rd, 2014 in eight Kenyan counties in the former provinces of Nyanza and Western. A nationally representative sample was not feasible due to budget constraints; these two provinces were purposively chosen as the ideal location to study the topic of child mortality in Kenya. Nyanza is the region of the country with the most dire health outcomes. I chose to study the most afflicted province because that is where health is most likely to take priority in the political preference structure. Studying a province where health takes high priority will allow me to investigate how politicians address the issue of health. This creates a potential threat to my findings that health is important in the Kenyan political scene. I address this threat by also conducting my survey in Western, a region with significantly better health prospects.

Western is an ideal comparison region, as it is similar in many regards (including political allegiances) and is a neighboring region, but has fared better in terms of overall health. Overall, eight counties were included in the survey. The

four counties from the Nyanza region represent four out of the six total counties in the province. The four counties from the Western region represent 100 percent of the province. The number of surveys to take place in each county is proportional to their population. The following table shows how many interviews took place in each county.

Table 2.1: Surveyed Counties

Nyanza		Western	
County	N	County	N
Homa Bay	120	Bungoma	144
Siaya	120	Busia	100
Migori	122	Kakamega	155
Kisumu	144	Vihiga	101

506 of the surveys were conducted in former Nyanza, and the other 500 were conducted in former Western. Within each county, sublocations were randomly chosen for 20 surveys to take place in each.

All respondents were parents or legal guardians of children under the age of five. Because women are generally responsible for child rearing in Kenya, I decided that 70 percent of respondents would be female, while 30 percent were male. The 30 percent male were left in the survey because it is important for us to know if appeals by politicians affect men and women differently. Respondents were allowed to choose either English or Swahili for the interview: 48.2 percent chose English and 51.8 percent chose Swahili. Approximately three-fifths of respondents in Nyanza chose English and approximately three-fifths in Western chose Swahili.

Individual respondents were chosen by Ipsos Limited's standard practice procedures. Interviewers were instructed to conduct a random walk; the instructions differed for urban and rural. In urban areas, they first found and recorded a

permanent structure (such as a school or a church). They then calculated a “date score” by adding the digits of that day’s date: if it were the 15th, the date score would be 6 (1+5). They would then proceed to the sixth house on their left (based on the date score). If they did not record a successful interview at that home, they moved to the next immediate home on their left. When a successful interview was recorded, they skipped four homes (on their left) and approached the fifth home.

In rural areas, interviewers still begin by finding and recording a permanent structure. They then searched for a homestead (a small gathering of homes) that was at least 200 meters away. They first approached the main home in that homestead (which is almost always the one straight across from the gate). If they did not record a successful interview at the main home, they then approached other homes within that same homestead. Once a successful interview had been completed, the interviewers left that homestead and moved to another homestead that was at least 200 meters away. No two interviews were conducted in the same homestead.

Each interviewer was told how many interviews to conduct each day (five or six maximum). They were also given a quota of male or female surveys to be completed. On a typical day, they were told that they were to interview one male and four females. The interviewer was allowed to choose when to conduct a survey with the male (so it could be the first of their day or the last, at their discretion).

2.5 Methodological Differences from Previous Publications

My research adopted a different sampling strategy from the other works. All of our surveys were conducted in the areas of Nyanza and Western Provinces. I

surveyed a wide range of Kenyans from eight counties; whereas the other articles were based mostly in smaller geographic units. Three of the cited articles (Blum et al., 2011; Omoro et al., 2013; Olson et al., 2011) conducted research in Asembo, a village in Nyanza Province. Othero et al. (2008) surveyed 927 respondents exclusively in Nyando (where some of my surveys also took place). Simpson et al. (2013) sampled only in Bungoma (where some of my surveys also took place). Date et al. (2013) conducted their research in 12 areas of Nyanza and Western Provinces, and is thus more similar to my sample. Zwisler et al. (2013) do not report which villages their surveys took place in. The DHS are nationally representative.

My research pinpoints a more specific problem than previous literature, and thus allows for a better understanding of the causal mechanism of diarrheal mortality. The previous literature shows a gap between knowledge and administration of ORS. They show that Kenyans are knowledgeable of ORS (knowledge) and that they frequently have not administered ORS during their child's most recent bout of diarrhea (administration). Demand for ORS (the desire to use it), lies somewhere in the middle of knowledge (simply knowing that you should use it) and administration (actually using it). The previous publications use their results to interpolate a claim that demand for ORS is low in Kenya. My research investigates this postulation in a meaningful way and shows that the previous literature is misleading; demand for ORS is high in Kenya. The key question then becomes why there is a gap between demand for ORS and uptake.

The majority of the articles cited asked their respondents if they administered ORS to their child during their child's most recent bout of diarrhea. My survey, on the other hand, asks respondents if they give their children ORS when their child is sick with diarrhea. The differences in wording give us some insights into general practices in Kenya. My results will show that Kenyans *sometimes* administer ORS

to their children. The only above article that asks about general ORS use is Zwisler et al. (2013) who report that about 50 percent of respondents in Kenya were “ever-users” of ORS. From the other cited articles, we know that Kenyans do not *always* administer ORS. However, both my research and the other publications acknowledge (for the most part) that Kenyans are highly knowledgeable of ORS. What explains the gap between knowledge and administration?

The other articles either imply or explicitly state that lack of administration of ORS is one of willful inaction (a lack of demand); that agency-slack allows for parents to not do the right thing even though they know better. However, few of these articles explicitly ask respondents why they did not use ORS. My survey, on the other hand, explicitly asks respondents why they do not use ORS.

2.6 Survey Results

Kenyans are aware of the risks that diarrhea poses. Whereas Date et al. (2013) write that Kenyans express little knowledge that childhood diarrhea required immediate care, and other scholars imply that diarrhea is seen as a non-serious event in Kenya, I find the opposite. 68.3 percent of respondents indicate that diarrhea is a potentially deadly illness in children and another 16.1 percent indicate that it is harmful, but not deadly (Table 2.2). In response to a question asking if treatment is necessary, 97.3 percent of respondents indicate that diarrheal illness requires medical treatment (Table 2.3).

Table 2.2: Perceived Severity of Childhood Diarrhea

	Freq.	Percentage
Potentially deadly	687	68.3
Harmful, but not deadly	162	16.1
Normal process, neither good nor bad	114	11.3
Cleansing, and good for the child	35	3.5
DK	8	0.80
	n = 1,006	

Table 2.3: Perceived Necessity to Treat Diarrhea

	Freq.	Percentage
Treatment is necessary	979	97.3
Treatment is unnecessary	25	2.5
RTA	2	0.2
	n = 1,006	

Furthermore, Kenyans know the causes of diarrhea. The public health literature portrays an image of Kenyans as ignorant of the causes of diarrhea. They highlight that many people in rural Kenya believe that witchcraft causes diarrhea. Respondents in my survey were asked to list causes of diarrhea in an open-ended fashion, and were allowed to mention up to three responses. The results show that only 0.3 percent of respondents suggest that any form of taboo causes childhood diarrhea. Rather, 78.1 percent of people indicate poor hygiene, 46.4 percent indicate contaminated food, and 42.0 percent indicate unclean water as one of their three responses.¹¹ My survey indicates that the citizens of western Kenya recognize

¹¹A full table of all results from this question can be seen in Table B.1. 42 percent of respondents indicating that unclean water is a cause of diarrhea is particularly low. It is possible that there is a lack of understanding about the importance of clean water. However, I think the results are at least partially explained by survey design. The question was asked in an open-ended fashion and not a “check all that apply”. If respondents were given a list of potential causes of diarrhea, and asked to tick all the options that they believe are causes of diarrhea, I hypothesize that many more than 42 percent would select unclean water. Also, while my survey allowed for respondents to list up to three mentions, only 55 percent actually did provide three. It is possible that respondents mentioned one or two things (hygiene and food) and simply moved to the next question.

modern medical practices and nearly none of them attribute poor health to taboos such as witchcraft. The open-ended method of asking this question strengthens the validity of my results; respondents were able to identify the correct causes of diarrhea from memory, rather than picking them from a multiple-choice list. One may question why each of these three things was not mentioned at a 100 percent rate. The less than unanimous responses are mitigated by the fact that many respondents listed only one cause; and that their one mention was one of the three leading causes of diarrhea.

Table 2.4: Perceived Causes of Diarrhea

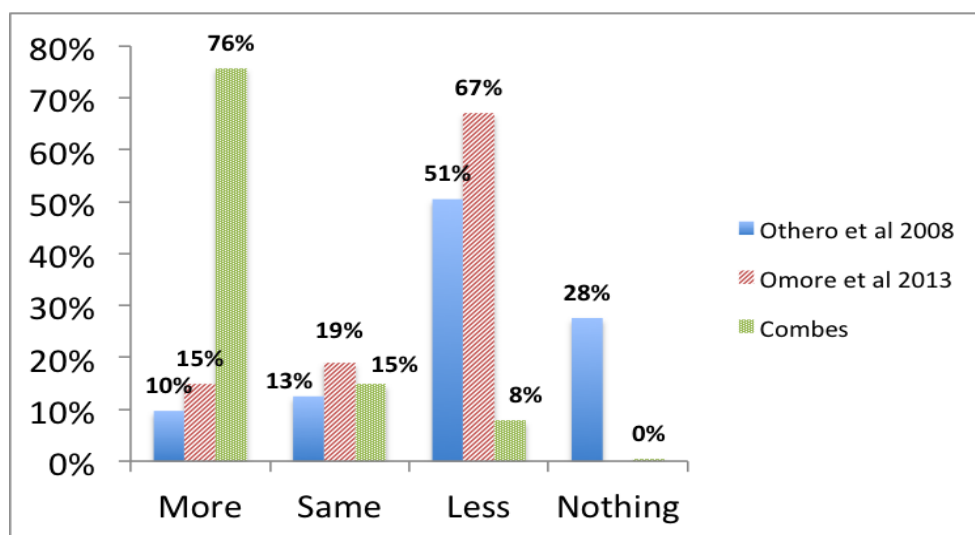
		Freq.	Percentage
1	Poor Hygiene	786	78.1
2	Contaminated Food	467	46.4
3	Unclean Water	422	42.0
	Taboos	3	0.3
		n = 1,006	

Not only are respondents aware that unclean water causes diarrhea, but they accurately identify lack of clean water and diseases as major problems in their locality. The first question of the survey (after screening questions) asked respondents to list up to three of the most serious problems facing their locality. The question was open-ended to give the respondents freedom to state whatever they felt. 32.9 percent list clean water as one of their three responses (the most frequent response), and 16.1 percent of people indicate diseases or epidemics (the fourth most frequent response). Poor sanitation and insufficient health services are each one of the eight most common responses. The top eight responses can be seen in Table 2.5, and a full list of the 25 responses that I received can be seen in Table B.2 in Appendix B. As this was the first question of the survey, it is unlikely that people gave these indications as the result of a strong priming effect.

Table 2.5: Most Serious Problems in Locality

		Freq.	Percentage
1	Lack of Clean Water	331	32.9
2	Poverty	167	16.6
3	Insecurity	166	16.5
4	Diseases/Epidemics	162	16.1
5	High cost of living	138	13.7
6	Poor Sanitation	113	11.2
7	Unemployment	112	11.1
8	Insufficient Health Services	101	10.0
		n = 1,006	

Figure 2.6 shows that 75.8 percent of respondents in my survey give their child more to drink when they are suffering from diarrhea. This is a stark contrast from the 15 percent and 9.7 percent reported in Omore et al. (2013) and Othero et al. (2008). Similarly, less than one percent of respondents give their child nothing to drink compared to the over one-quarter of Othero et al's respondents.¹²

**Figure 2.6:** Liquid Intake When Child Has Diarrhea, Comparison

More than 50 percent of respondents indicate that they give their children the

¹²My survey results are that only 0.4 percent of Kenyans give their child zero liquid during bouts of diarrhea; a figure so low that it is nearly invisible on the bar chart and rounds to zero.

same or more food to eat during bouts of diarrhea, and only 3.1 percent restrict their child's food intake entirely. More than 35 percent of respondents in each of Omore et al. (2013) and Othero et al. (2008) responded that they give their child zero food when they suffer from diarrhea. Figure 2.7 shows respondents' administration of food to children with diarrhea. While very few of my respondents report giving zero food to their child, a much higher percentage (40.3 percent) report that they do somewhat restrict their child's food intake. The recommended practice is to give children with diarrhea the same or more food during their bout with the illness. My results show that more respondents follow these practices than in the DHS sample.

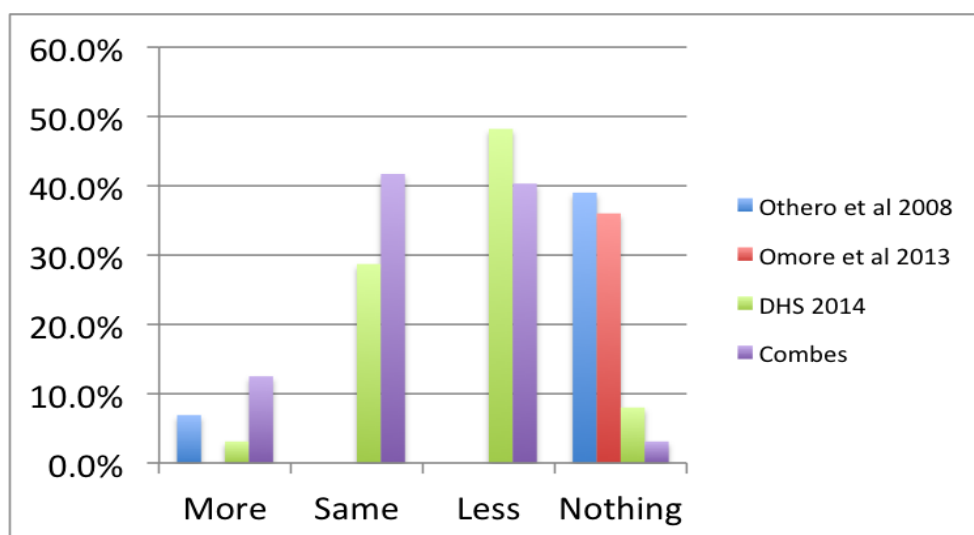


Figure 2.7: Food Intake When Child Has Diarrhea

The first question about ORS in my survey was “have you ever heard of oral rehydration solution (ORS) that you can get for the treatment of diarrhea?” 91.4 percent of respondents are aware that ORS is a treatment for diarrhea. This is consistent with the 2014 DHS results in Kenya that 93 percent of Kenyans are knowledgeable of ORS.

All of the other articles that report ORS use find that a minority of respondents use ORS. In my survey, 83 percent of respondents report that they give

their child ORS when suffering from diarrhea, doubling and quadrupling the percentages reported by the other scholars. However, the wording of my question is substantially different from the other surveys. The previous scholars ask if the respondent had administered ORS to their child during his most recent bout of diarrhea. My survey asks if the respondent administers ORS more generally. I will interpret the difference in these results in the discussion section.

What explains the gap between demand for ORS and universal administration? I asked respondents if they had ever experienced a stockout of ORS, asking “have you ever arrived at a dispensary or health facility and found out that they are out of stock of ORS?” One-third of respondents who have ever attempted to receive ORS have personally experienced a time when they went to a dispensary and were told that no ORS was available. In the next chapter, I will show that stockouts of ORS are a prevalent problem in western Kenya. Of the literature that I am comparing my results to, the mechanism of stockouts is intimated only by Olson et al. (2011), who report that “a minority of caregivers reported that ORS is available in nearby shops”. However, Olson and colleagues did not systematically measure ORS availability in their study area.

Unfortunately, many Kenyans still believe that ORS is intended to shorten the duration of diarrheal incidence. I asked respondents to list up to three benefits of using ORS: 48.3 percent believe that it stops the symptoms as one of their three responses, which was the modal response. Almost as many respondents (44.0 percent) indicate that it rehydrates the child (the correct response) in one of their three responses. It is concerning that so many parents believe that ORS is intended to shorten the duration of diarrhea, because it suggests that they have not fully accepted that the healthiest thing for the child is to eliminate the bacteria from the body. If parents are sincerely dedicated to stopping the symptoms, they are likely to get antidiarrheals from the

dispensary; endangering the health of their child.

Table 2.6: Perceived Benefits of Administering ORS

		Freq.	Percentage
1	Stops Symptoms	486	48.3
2	Rehydrates	443	44.0
3	Adds Energy	249	24.8
4	Increases Child's Appetite	28	2.8
5	Replaces Salts	24	2.4
		n = 1,006	

My results differ significantly in how respondents feel about alternate treatments for diarrhea. While Blum et al. (2011) and Olson et al. (2011) write that rural Kenyans have a strong preference for herbal remedies, barely more than one percent of respondents in my survey indicate that herbal remedies are the best treatment for childhood diarrhea.

My results are similar to previous literature in that reports of antidiarrheal use are still dangerously high. 77 percent of respondents in my survey report that they give their child antidiarrheals when she is suffering from diarrhea.

As can be seen in Figure 2.8, there is still a high percentage of families that report giving their children antidiarrheal drugs. 76.6 percent of respondents in my survey indicated giving their child an antidiarrheal drug, which nearly matches the percentage in Olson et al. (2011).

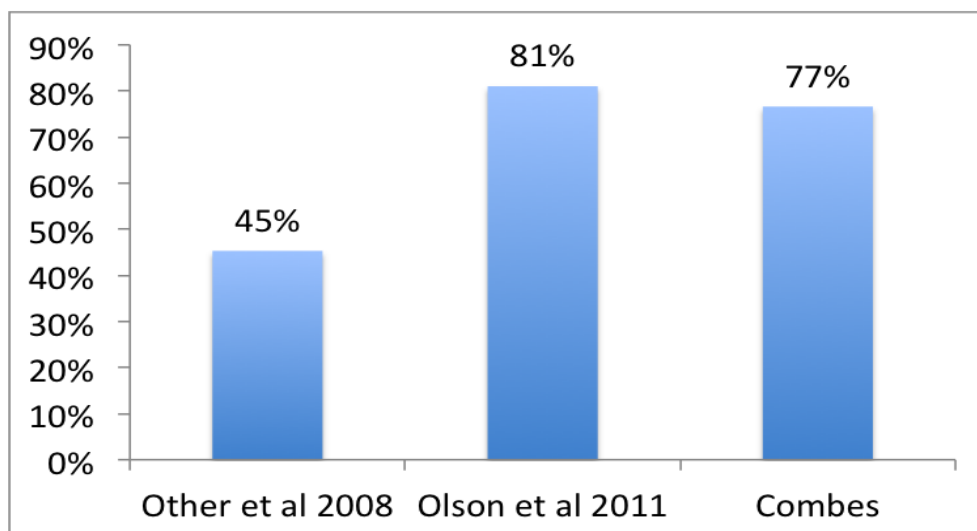


Figure 2.8: Percentage Providing Antidiarrheals When Child Has Diarrhea, Comparison

One positive note is that Kenyan parents are aware that ORS is the gold standard of treatment for diarrhea. Three times as many respondents indicate that ORS is “the best treatment for diarrhea in a child” than indicate that antidiarrheals are the best (Figure 2.9); a stark contrast from Zwisler et al. (2013) who report that nearly twice as many Kenyans believe that antidiarrheals are a better treatment than ORS. Simpson et al. (2013) note that only six percent of respondents believe that ORS is their preferred treatment for diarrhea. Full results can be seen in Table B.3 in Appendix B.

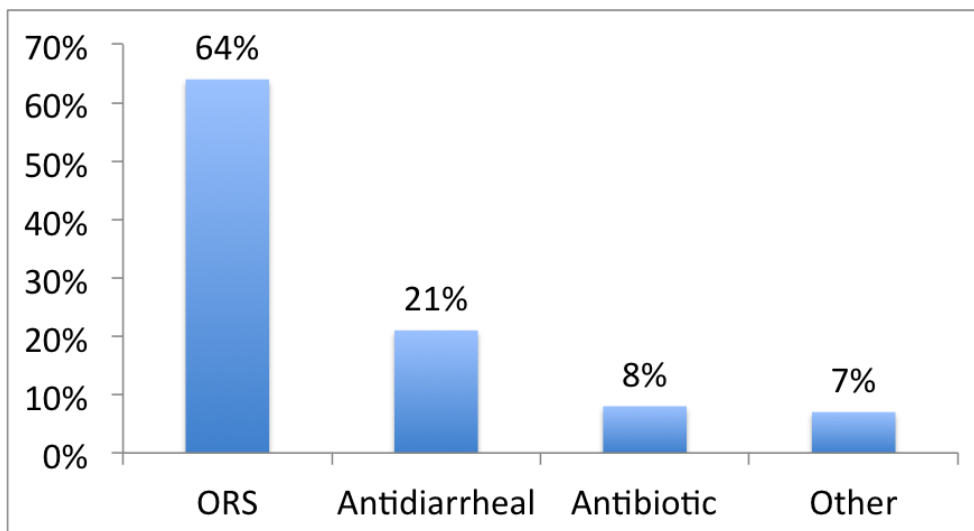


Figure 2.9: Perceived Best Treatment for Diarrhea

2.7 Discussion

My results diverge from previously published works in that I show that Kenyans practice better habits when their children have diarrhea. Parents engage in better feeding and hydrating practices and are more knowledgeable of the causes of diarrhea than previously thought. My results are similar to theirs in that Kenyans are administering antidiarrheals to children with alarming frequency. While it appears that my results show a significant increase in ORS use, I believe that is explained by the wording of the question. I will also show that Kenyans are more likely to use ORS now than at the time of those previous studies because of government education campaigns.

It is possible that the differences in our results are explained by the minor differences in where the research took place. My sample is most different from the three articles for which the research took place in Assembo, a sparsely populated region of Nyanza according to Blum et al. (2011). Without knowing exactly which area of Assembo these authors researched, I cannot know for sure if it should be

considered “deep rural”. Given that Blum and coauthors point out the sparse nature of Assembo, I will assume that Assembo is somewhat distinct from the populations that I surveyed (as deep rural communities were excluded from my survey). I conduct robustness checks by limiting my analysis to only the poorest and least educated of my respondents in an attempt to match the characteristics of respondents from deep rural areas. To test ORS use among the poorest individuals in Kenya, I restrict analysis to those without electricity, which represents 63.7 percent of my total sample. Respondents without electricity report ORS use at slightly higher rates than the rest of the sample. When restricting my analysis to the least educated of my sample (the 16 percent that did not complete primary school), reported ORS use is remarkably similar to the sample mean. As such, I believe that knowledge of diarrhea, and practice in the gold standard of treatment, is significantly better in Kenya than previous publications have stated, even in the least educated and poorest segments of society.

I find further evidence that the difference in my results is not because of sampling differences when I restrict my analysis to individual sublocations. Of the 50 sublocations that I sampled, the minimum percentage of respondents who are aware of ORS is 76 percent. Only two sublocations have lower than 80 percent of respondents who are knowledgeable of ORS. The sublocation with the lowest percentage of respondents reporting that they administer ORS to their children is Kombok in Nyanza, where only 65 percent of respondents report administering ORS to their children. Kombok’s reported ORS use is a full 20 percentage points higher than most of the previous literature reports (Othero et al. (2008) report that 45 percent of parents administer ORS). Only four sublocations in my sample report ORS usage rates at lower than 80 percent.

My survey research also took place several years after the other cited projects.

Kenyans have become more informed about ORS since the time of the cited research. I asked respondents if they had ever received training on how to care for childhood diarrhea, and 38.8 percent say that they have. Of the 390 respondents who have received training, 229 received training from a local health organization and 115 received training from the government. People who have received training from a local health organization or the government are significantly more likely to administer ORS to their children and identify ORS as the gold standard of treatment. As reported, 83 percent of the total sample administer ORS to their children some of the time. 94 percent¹³ of people who received training from a local health organization and 92 percent¹⁴ of people who received training from the government administer ORS to their children some of the time; each of these findings are statistically significant at the 95 percent confidence level. 64 percent of the total survey sample identify ORS as the gold standard of treatment for children with diarrhea. 73 percent¹⁵ of parents who have received training from a local health organization and 84 percent¹⁶ of people who have received training from the government identify ORS as the gold standard of treatment for diarrhea.

I conduct logistic regressions to see if government training predicts ORS usage and knowledge that ORS is the gold standard of treatment. Table 2.7 and Table 2.8 show the results of logistic regressions with county fixed effects.¹⁷ The regressions control for training from other sources, level of education, if the person lives in a rural area, how far they live from the dispensary, if they have ever experienced the death of a child under the age of five, marital status, sex, age, and a series of economic indicators (if the person has experienced a food shortage, if they own a TV, and if their

¹³p=0.015

¹⁴p=0.011

¹⁵p=0.000

¹⁶p=0.048

¹⁷Robustness checks with each of these regressions run with robust standard errors can be found in Table F.1 and F.3 in Appendix F.

house has electricity). In every specification, receiving training from the government or a local health organization is a significant indicator at the 99 percent level that the respondent knows that ORS is the gold standard of treatment and administers it to their child.

Table 2.7: Use ORS, Logit, County Fixed Effects

DV: Use ORS		
Variable	Coefficient	(Std. Err.)
Training: Government	0.938***	(0.240)
Training: Local Health Org	1.281***	(0.218)
Training: Int'l Org	-0.100	(0.917)
Education	0.329***	(0.083)
Rural	-0.507*	(0.293)
Food Shortage	0.086	(0.163)
Has TV	-0.177	(0.219)
Has Electricity	-0.158	(0.279)
Marital Status	0.046	(0.094)
Male	-0.744***	(0.150)
Age	-0.019	(0.073)
Child Died	0.610*	(0.370)
Time to Facility	-0.159	(0.162)
Intercept	1.076**	(0.526)

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

Table 2.8: Gold Standard is ORS, Logit, County Fixed Effects

DV: ORS is Gold Standard		
Variable	Coefficient	(Std. Err.)
Training: Government	1.284***	(0.304)
Training: Local Health Org	0.633***	(0.141)
Training: Int'l Org	0.264	(0.574)
Education	0.097	(0.060)
Rural	-0.060	(0.268)
Food Shortage	0.051	(0.144)
Has TV	0.200	(0.203)
Has Electricity	-0.171	(0.185)
Marital Status	0.094	(0.096)
Male	0.080	(0.160)
Age	-0.146**	(0.070)
Child Died	-0.017	(0.171)
Time to Facility	0.166	(0.147)
Intercept	0.053	(0.461)

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

The grimmest result of this chapter is that Kenyans are far too likely to administer antidiarrheals to their children. My survey shows that people who received training from the government are significantly less likely to administer antidiarrheals; whereas people who received training from a local health organization are significantly *more* likely to administer antidiarrheals to their children. In the entire survey sample, 77 percent of respondents admit to administering antidiarrheals to their children; whereas 63 percent of people who received training from the government and 86 percent of people who received training from a local health organization admit to giving antidiarrheals to their children (each of these differences is significant at the 99 percent significance level in a Pearson Chi Square test of independence).¹⁸ This suggests that the government is actively advising people to not use antidiarrheals, while local health organizations might be promoting them. I speculate that the local health organizations may profit

¹⁸ $p=0.002$ and $p=0.001$ respectively

from the sale of antidiarrheals. I run a logistic regression to see if training from the government or local health organizations leads to decreased administration of antidiarrheals. In both a model with county fixed effects (Table 2.9 presented below) and robust standard errors (Table F.2 in Appendix F) government training is significantly likely to decrease administration of antidiarrheals while training from a local health organization is likely to increase it.

Table 2.9: Use Antidiarrheals, Logit, County Fixed Effects

DV: Use Antidiarrheals		
Variable	Coefficient	(Std. Err.)
Training: Government	-0.683***	(0.264)
Training: Local Health Org	0.685***	(0.110)
Training: Int'l Org	-0.061	(0.507)
Education	0.087	(0.081)
Rural	-0.193	(0.260)
Food Shortage	-0.048	(0.207)
Has TV	0.258	(0.399)
Has Electricity	-0.623*	(0.359)
Marital Status	-0.028	(0.092)
Male	-0.086	(0.215)
Age	-0.012	(0.101)
Child Died	0.313	(0.239)
Time to Facility	-0.598***	(0.116)
Intercept	2.116***	(0.385)

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

In 2015, I conducted a second round of surveys in the same sublocations, this time surveying health workers in 402 local dispensaries. To verify that the government has administered information campaigns, I asked the dispensary employees if there had been any educational trainings about diarrheal diseases for parents in the previous five years. 45 percent indicate that either the local or the national government recently hosted an educational training session about diarrheal diseases in that local area. To verify that parents have increased their willingness to administer ORS to their

children, I asked dispensary workers if parents were more, equally, or less likely to use ORS than two years ago. Over one-third of dispensary workers believe that parents are more likely to administer ORS to their children (Figure 2.10).

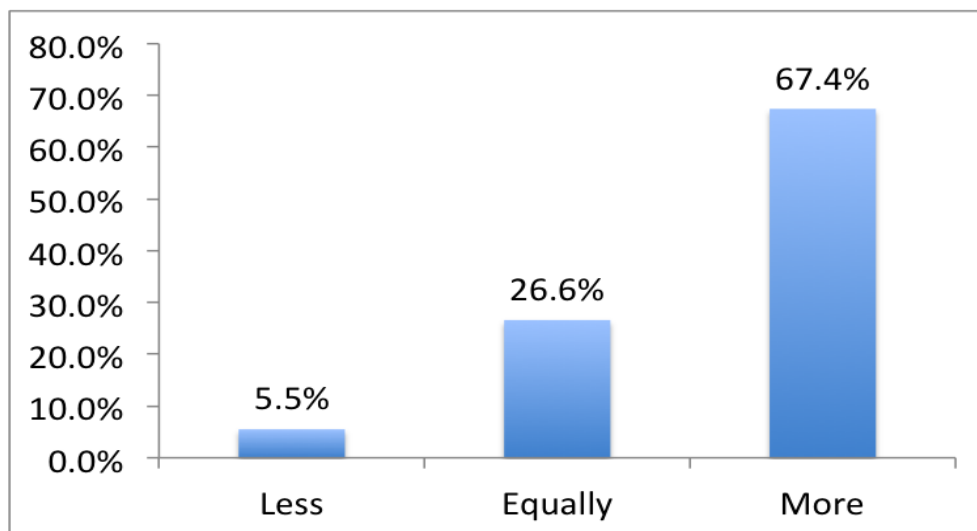


Figure 2.10: Trend in Administering ORS Over Past Two Years

DHS data also shows that Kenyans' knowledge of ORS has increased over the years, going from 71 percent in 2003 to 78.4 percent in 2009 to 92.8 percent in 2014. One startling figure is that despite this rise in knowledge about ORS, use of ORS has not followed the same trend according to DHS data. In the same periods of time, reported ORS use went from 29.7 percent to 72.7 percent to 53.6 percent. What explains the simultaneous drop in usage despite an increase in knowledge?

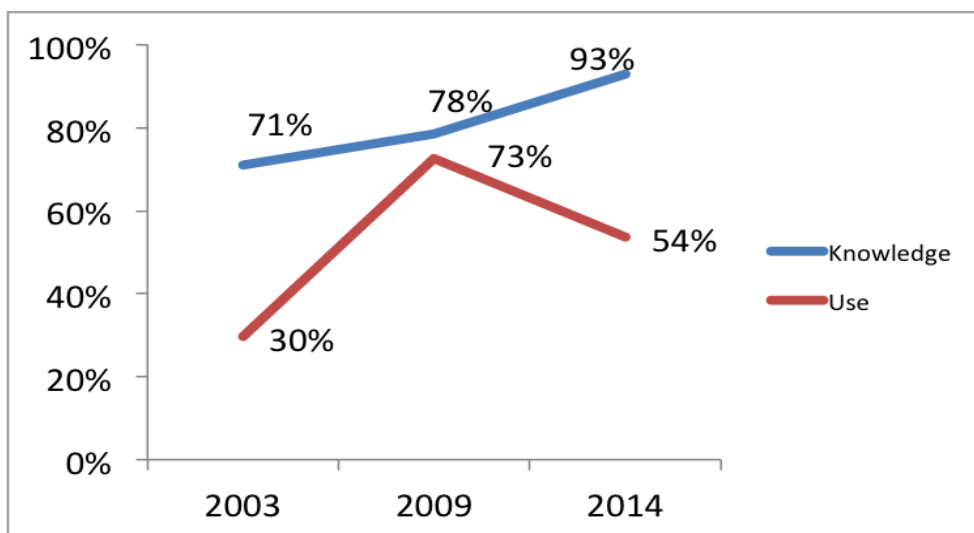


Figure 2.11: DHS: Knowledge and Use of ORS

2.8 Conclusion

I find that Kenyans are remarkably more knowledgeable about the causes and proper treatments of childhood diarrhea than previously thought. I believe that most Kenyan parents want to (and would successfully) administer ORS every time their child has diarrhea, but are prevented from doing so by a lack of supply. The lack of supply is evidenced by the one-third of respondents who have personally experienced a stockout of ORS. The lack of supply, as a result, leads to the findings of previous publications that 50 percent or more of parents failed to administer ORS to their child during his most recent bout of diarrhea. This suggests that ensuring universal availability of oral rehydration solution could drastically reduce childhood mortality from diarrhea. In the next chapter, I will show that the Kenyan government has failed to stock ORS in 40 percent of dispensaries in western Kenya.

Chapter 3

Supply Obstacles

3.1 Introduction

The purpose of this chapter is to show that dispensaries in Kenya are systematically undersupplied. Many health facilities are frequently out of stock of ORS and other essential medicines. I suggest that stockouts are the primary cause of diarrheal mortality in Kenya, because parents do not have access to ORS. This chapter will also show that stockouts are not the fault of a lack of knowledge by the dispensary workers; the dispensary workers are knowledgeable of ORS and submit orders for new shipments. Despite submitting these orders, dispensaries frequently do not receive the medications that they request. This suggests that the failure of supply is happening at a level above the dispensary. In Chapter 5, I will explain that politicians are neglecting to forward the orders to the Kenyan Medical Supply Agency (KEMSA, the organization that procures and disseminates medication).

Approximately one-third of parents in western Kenya who have attempted to receive ORS have experienced a stockout. Lack of availability is thus a major mechanism explaining the low usage of ORS. Is availability of ORS in Kenya as low as respondents report? Efforts to elicit data on stock levels of medicines from the

Kenyan Ministry of Health (MoH), the Kenyan Medical Supply Agency (KEMSA), and the Kenyan Medical Research Institute (KEMRI) were unsuccessful. While my contacts in these agencies believed that “that data must exist somewhere”, each one came back empty handed and resolved to the fact that this data did not, in fact, exist. As such, I conducted an independent audit and survey of the Kenyan dispensary system in western Kenya.

In this chapter, I show that approximately 40 percent of Ministry of Health run dispensaries are out of stock of ORS in western Kenya. “Out of stock” means that the dispensary has zero units of a particular drug on hand. I also show that dispensaries are generally missing a large percentage of essential medicines.

3.2 Mandate to Provide Essential Medicines

The government of Kenya has both the responsibility and the capacity to supply essential medicines. “Essential medicines” are the medications that all health facilities are required to have on hand at all times; a list of which the Kenyan Ministry of Health provides (World Health Organization et al., 2010). The government is responsible for maintaining the supply of these medicines in all facilities for which it is the owner (a majority in the country). To improve the equitable delivery of medicines across the country, KEMSA now operates on a “pull system” of distribution; meaning each dispensary orders the quantity that it needs. Each dispensary submits an order of what they need to their county government. The county government then sends the orders and a payment to KEMSA. Upon receipt of the payment and the order, KEMSA delivers the medicines to the dispensaries. A flowchart of the supply chain of essential medicines is provided in Figure 3.1.

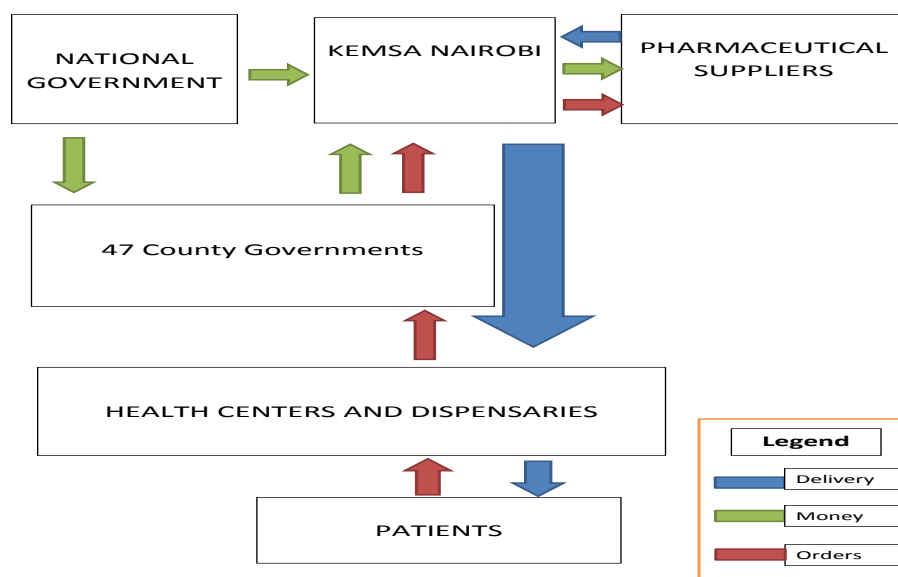


Figure 3.1: Supply Chain of Essential Medicines

The Government of Kenya prioritizes proper treatment of diarrhea. In no uncertain terms they endorse ORS as the gold standard of treatment to be used in all cases of childhood diarrhea. They denounce the use of antidiarrheal medicines in children for all cases; and discourage prescribing antibiotics to children except in the case of shigella dysentery (Ministry of Public Health and Sanitation, 2010).

The 2010 Constitution mandates that all health services for children under the age of five be provided for free. This includes the receipt of medication. Thus, any family should be able to take their child to any government health facility (including dispensaries) and receive ORS free of charge. The Kenyan health system has six tiers. Dispensaries are intended to be the first facility that families go to for illnesses.¹ Dispensaries are equipped to deal with common illnesses for which diarrhea is a perfect example. If a patient's symptoms are very severe (such as cancer or an illness

¹Dispensaries are the second tier of the health system. The first tier of the system is intended to be Community Health Workers (CHWs). CHWs are residents of a town that provide basic health services to their neighbors. CHWs are given soap, bed nets, ORS, and a handful of other basic goods that they are encouraged to supply to households. However, the government has neglected to fund the CHW program and their presence is minimal in Kenya.

that will not respond to typical treatment), the dispensary refers him to the nearest health center (level 3). If the illness is too advanced for the health center, they refer the patient to the level 4 hospital. The fifth tier of the health system is a county hospital (the top hospital in the county) and the sixth and highest tier of the health system are the two national hospitals (Kenyatta National Hospital in Nairobi and Moi Teaching and Referral Hospital in Eldoret). This tiered system is intended to prevent delays at higher levels and allow specialized doctors to spend their time on specialized illnesses. However, patients can legally go to a higher tier of care as their first point of contact. Despite this legality, my dissertation focuses on dispensaries as the intended first point of contact for children with diarrhea.

Kenya has the financial capacity to provide ORS in its dispensaries. While Kenya is not a wealthy nation, it is one of the strongest and fastest growing economies in Africa.² While it spends far less of its budget on the health sector than it pledges under the Abuja Accords (6 percent instead of 15 percent), it allocates enough funding to procure essential medicines. Chapter 5 will show that a large amount of Kenya's health budget is being wasted on the construction of new facilities that are never completed (referred to as "white elephants"). Politicians are constructing white elephants rather than stocking existing facilities with medications. Before I investigate *why* politicians make these allocations, I must first demonstrate the prevalence of stockouts in Kenya.

No systematic audits of the Kenyan dispensary system exist to my knowledge. The National Council for Population and Development in Kenya predicts that ORS is unavailable in 32 percent of dispensaries³, but they do not report the specific locations that were audited (National Council for Population and Development and ICF MACRO, 2012). As previously stated, major stakeholders in Kenya (MoH,

²Kenya has the sixth highest GDP in Sub-Saharan Africa (CIA World Factbook, 2016).

³This study surveyed 690 dispensaries across Kenya nationally in 2012.

KEMSA, and KEMRI) were unable to provide me with any indication of stock levels of their own dispensaries. As such, I conducted my own audit of MoH dispensaries in western Kenya.

3.3 Survey Methodology

The survey was conducted between July 20th and July 30th of 2015 in nine Kenyan counties of former Nyanza and Western provinces.⁴ Eight of the counties match the survey of Kenyan constituents that was conducted in 2014 (discussed in Chapter 2) and Kisii was added to collect information on one of the counties where I interviewed politicians (the interviews are discussed in Chapter 5).

The goal was to survey 50 dispensaries in each of the counties. As I already had data from constituents in many sublocations, I wanted to compare the constituent survey results with the dispensary survey results. As I did not have precise data on which dispensary each constituent respondent was likely to visit, I targeted every dispensary within each selected sublocation. First, all sublocations that were surveyed in my 2014 survey were selected into the 2015 sample (in 2014, these sublocations were chosen at random, excluding those in deep rural areas). I then included every dispensary from those sublocations in the sample. Next, I generated a list of all the remaining sublocations from that county (once again excluding deep rural sublocations) in random order. All dispensaries from each sublocation were added into the sampling frame in that order, until the total number of surveyed dispensaries in that county reached 50. In Vihiga and Busia, there were less than 50 dispensaries that met the inclusion criteria. As a result, I targeted every dispensary of interest in each of those counties (successfully

⁴A full draft of the survey instrument can be seen in Appendix J. IRB approval for this survey can be found in Appendix L.

surveying every functioning MoH dispensary in Vihiga County).

Table 3.1 shows how many dispensaries were surveyed in each county, ranging from 20 in Vihiga to 51 in Kisumu. In the parentheses is the percentage of functioning Ministry of Health owned dispensaries surveyed in each county, ranging from 52.6 percent in Homa Bay to 100 percent in Vihiga. In total, this project surveyed 64 percent of the functioning MoH dispensaries in these nine counties, marking a major audit of the health system in this region of the country.

Table 3.1: Surveyed Counties

Nyzanza		Western	
County	N (%)	County	N (%)
Homa Bay	50 (52.6)	Bungoma	50 (73.5)
Siaya	50 (58.8)	Busia	32 (76.2)
Migori	48 (59.3)	Kakamega	50 (58.1)
Kisumu	51 (64.6)	Vihiga	20 (100.0)
Kisii	48 (65.8)		

Survey enumerators were employees of Ipsos Limited, a leading market research firm in Kenya. The survey instrument was uploaded into a smartphone app called Survey2Go. Enumerators were instructed to arrive at each dispensary after 9:00am to increase the likelihood that an employee was present. They interviewed the highest-ranking employee present at the time. By far the modal job title of respondents was “nurse”, which is frequently the highest-ranking individual working at a Kenyan dispensary. 335 of the 402 respondents were nurses. The second most frequently interviewed level of employment was “clinical officer”, which ranks higher than a nurse, but not all dispensaries employ a clinical officer. A clinical officer represented 45 of the 402 dispensaries in the survey. Table D.1 in Appendix D contains a complete list of job titles for all survey respondents. The response rate was exceptionally high, with very few dispensaries refusing to participate.

3.4 Results

This survey confirms stockouts as a major obstacle to preventing child mortality in Kenya. As discussed in the previous chapter, Kenyan constituents report that a lack of supply is their main roadblock to preventing childhood mortality from diarrhea. To gauge if dispensary workers have the same impression, I asked them what the biggest obstacle to preventing childhood mortality from diarrhea was. The surveyed health professionals indicate that a “lack of ORS” is the single biggest problem they face in preventing childhood mortality from diarrhea; confirming the impressions of the parents in their region.

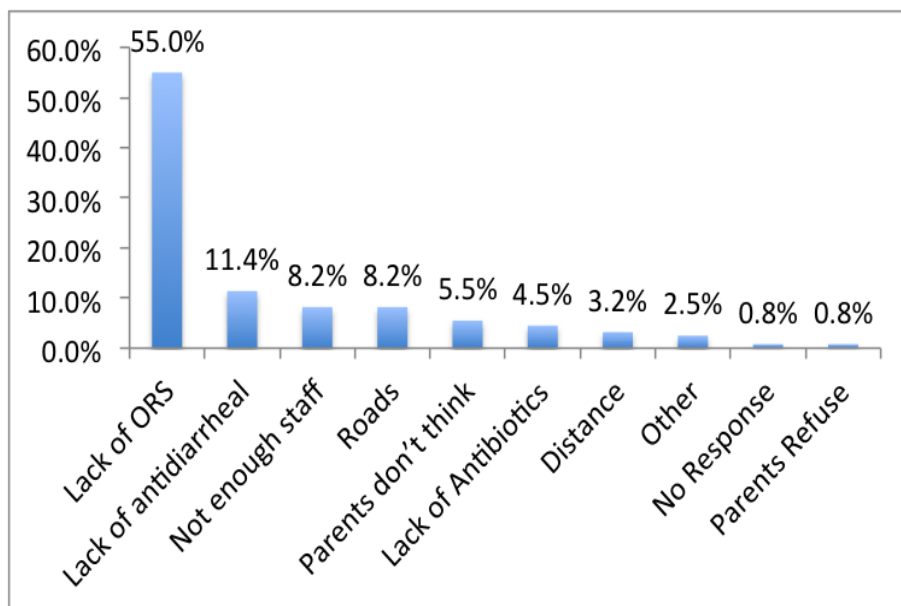


Figure 3.2: Biggest Challenge in Preventing Diarrheal Mortality in Kenya

A key motivation of this survey was to identify the proportion of dispensaries that had ORS and the proportion that did not. In my personal experience, I have frequently inquired about ORS at dispensaries in Kenya; usually being told that they do have it, but then not being shown any after the worker goes in the back to search for it.

To address the concern that workers might falsely claim to have ORS, each enumerator asked to be shown a sachet of ORS and to take a picture. I believe that the percentage of dispensaries that could not produce a sachet of ORS is a better indicator of stockouts than the percentage of dispensaries that initially admitted to not having any. Only 60 percent of dispensaries were able to show the enumerator that they had ORS.⁵ I received no reports that the reason it was not shown was anything other than they simply did not have it in stock. In theory, a dispensary worker could have claimed to not have the time to retrieve it or not had the key to a cabinet where it was stored. To the best of my knowledge, this was never reported. Rather, 40 percent of dispensaries in my sample sincerely did not have any ORS.

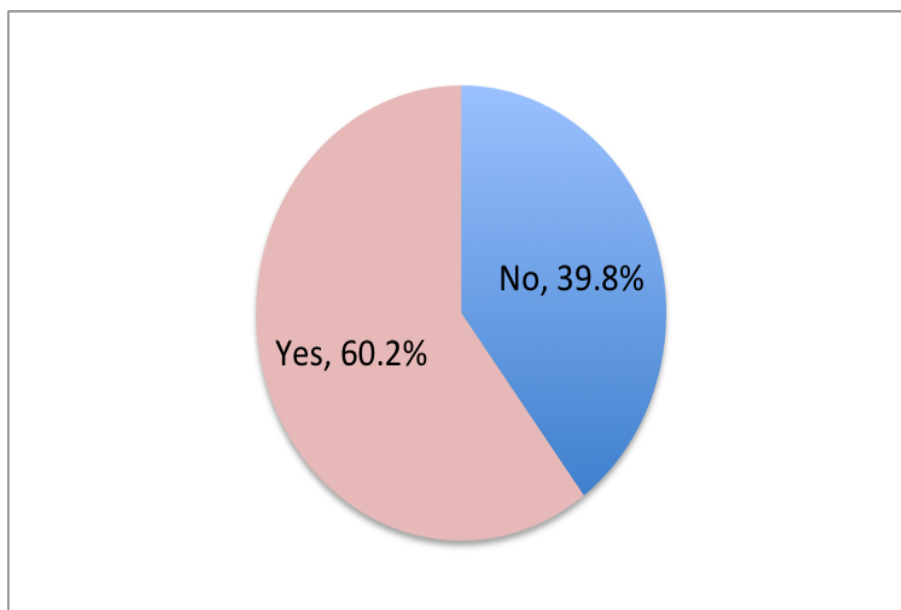


Figure 3.3: Dispensary Has ORS in Stock

A lack of supply of ORS has been an ongoing problem in Kenya. To verify that stockouts of ORS were occurring before this audit, I asked all the dispensary workers what proportion of the previous 12 months they had been out of stock. 38 percent of respondents informed me that they had been out of stock of ORS for at

⁵76 percent claimed to have ORS in stock.

least half of the previous year, suggesting that this is an ongoing problem. Figure 3.4 shows that 22 percent of dispensaries had been out of stock of ORS for half of the previous year, 13 percent for more than half, and 4 percent for the entire year.

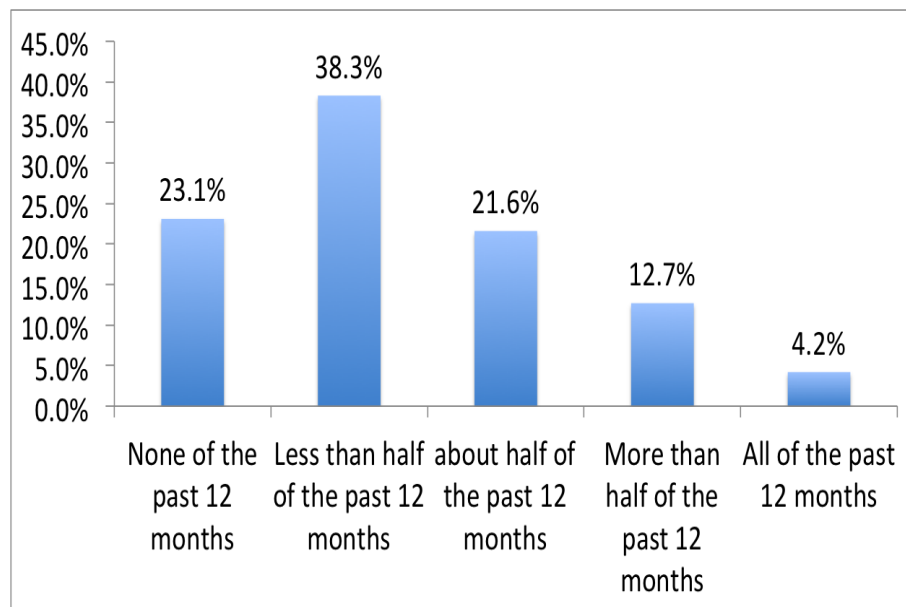


Figure 3.4: Frequency of ORS Stockouts in Past 12 Months

It is evident that the Kenyan citizens surveyed in my 2014 survey had given accurate information about the unavailability of ORS. Are stockouts a problem because the government has failed to supply the medicine or are dispensary workers incompetent or insubordinate? I asked the dispensary workers a series of questions about their knowledge of diarrhea and their practices in treating diarrhea to gauge their competence.

First, more than 99 percent agree that diarrhea is a problem of some sort, with 65 percent saying that it is a serious problem. It is not the case the dispensary workers simply refuse to order ORS because they do not believe that it is a vital issue.

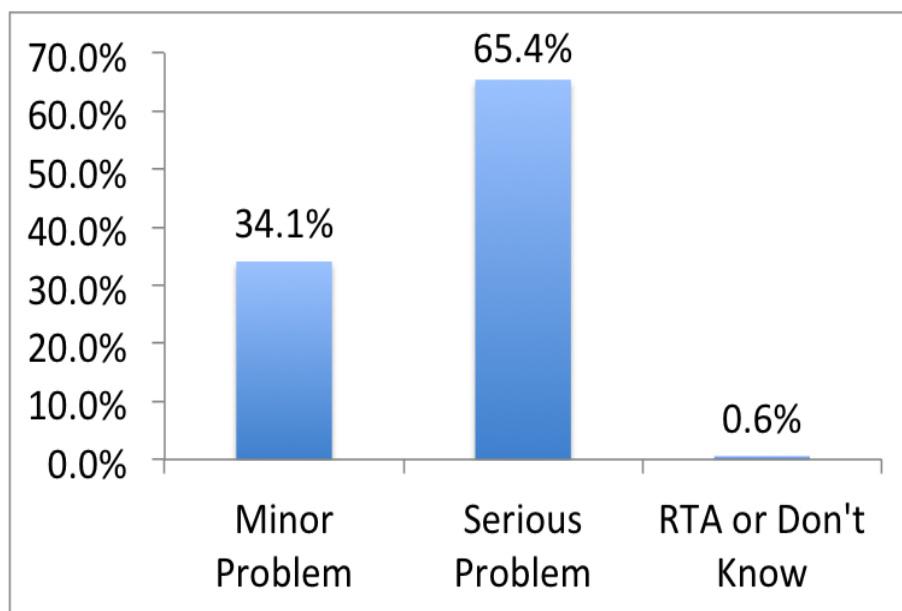


Figure 3.5: Dispensary Workers' Perceptions of the Severity of Diarrhea in Kenya

I also asked dispensary workers what the gold standard of treatment was for diarrhea. Respondents were given nine options to select from, including ORS, antidiarrheals, and antibiotics. 92 percent of respondents correctly identified ORS as the gold standard of treatment, suggesting that dispensary workers know the recommended treatment for diarrhea (see Figure 3.6).

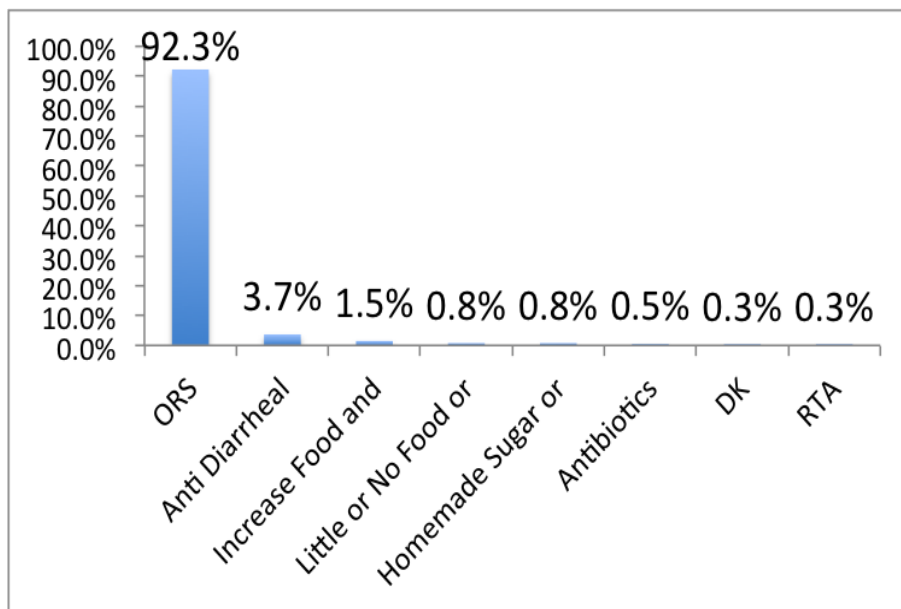


Figure 3.6: Dispensaries Perceived Gold Standard of Treatment for Diarrhea

Not only do dispensary workers know that ORS is the gold standard of treatment, but they also report that they prescribe ORS more than any other form of diarrheal treatment. Figure 3.7 shows which treatment respondents most frequently prescribe to children with diarrhea.

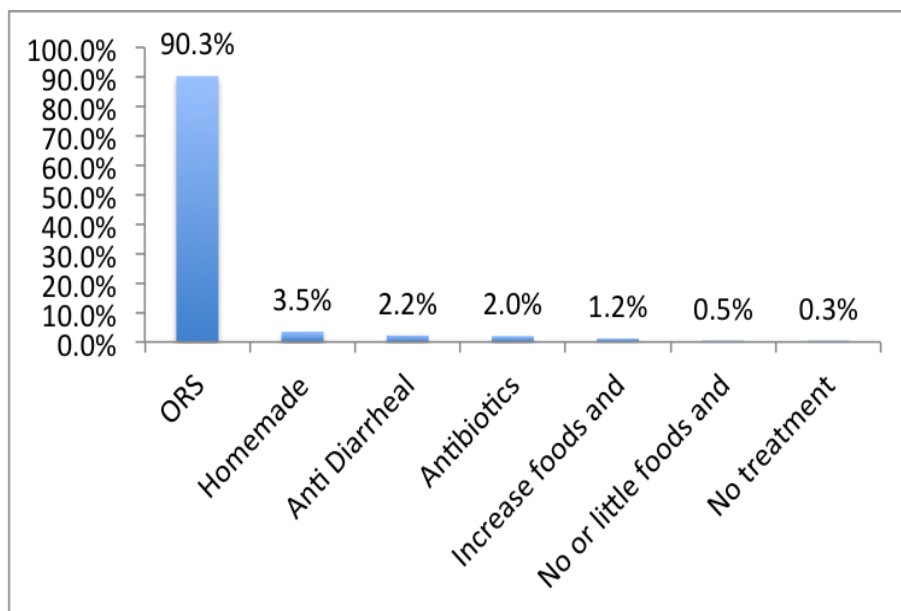


Figure 3.7: Most Frequently Prescribed Treatment for Diarrhea

In separate questions, I asked each respondent how frequently they prescribe ORS, antidiarrheals, and antibiotics to children with diarrhea. For each of the three treatments, the available options were that they never prescribe, prescribe less than half the time, prescribe about half the time, prescribe more than half the time, or prescribe every time a child with diarrhea enters their dispensary. The results from these three questions are shown in Figure 3.8. Nearly three quarters of dispensary workers prescribe ORS to every child with diarrhea. This strongly suggests that dispensary workers recognize the benefits of ORS.

Kenyan parents admit to frequently administering antidiarrheals to their children (as reported in Chapter 2). Dispensary workers confirm that they frequently prescribe antidiarrheals to children under the age of five. 30 percent of dispensary workers prescribe antidiarrheals to every child with diarrhea, and 11 percent prescribe it more than half the time. The fact that more than half of dispensaries provide antidiarrheals half or more of the time is quite concerning. Less than 14 percent of dispensary workers report that they never give antidiarrheals to

children.

It appears that many individuals in the local health system are promoting the use of antidiarrheals. These results might explain why citizens who received training from a local health organization are more likely to administer antidiarrheals to children (as is reported in Chapter 2). My suspicion is that dispensaries have an incentive to prescribe antidiarrheals; perhaps the ability to sell them. The Kenyan Ministry of Health's official policy is to never give antidiarrheals to children under the age of five. Thus, antidiarrheals certainly do not fall in the category of medicines dispensaries are required to distribute for free. Perhaps, this means that dispensaries are prescribing antidiarrheals in order to supplement their budgets.

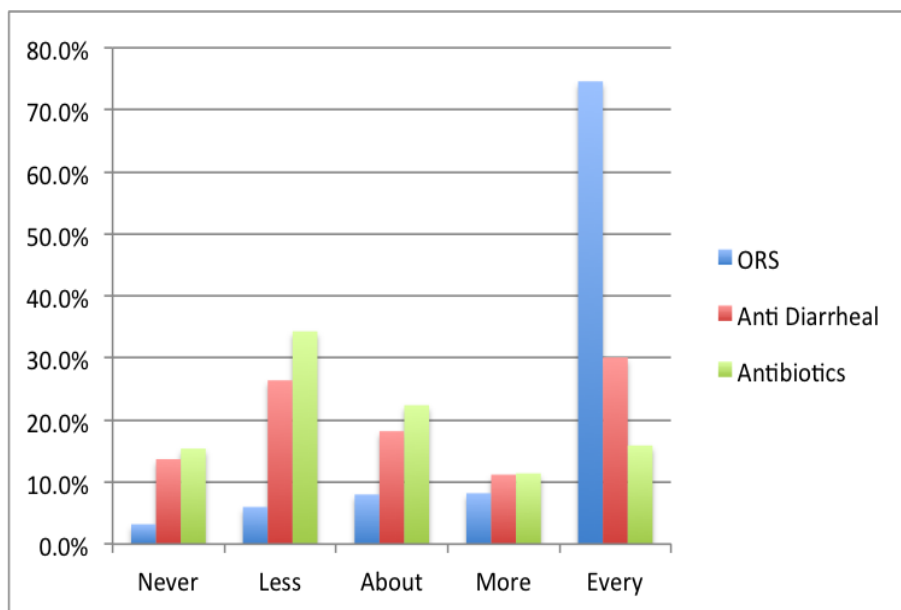


Figure 3.8: Frequency Providing ORS, Antidiarrheals, and Antibiotics

What do dispensary workers prescribe when ORS is not in stock? I asked dispensary workers to tell me what they most frequently prescribed to children with diarrhea when ORS was not available, because I had anticipated that stockouts would be a problem. According to the World Health Organization and the Kenyan Ministry of Health, the second best option for treating diarrhea is a homemade ORS solution,

often referred to as Oral Rehydration Therapy (ORT) (World Health Organization, 2016b). As shown in Figure 3.9, 39 percent of dispensary workers properly prescribe ORT when ORS is out of stock, indicating a high degree of knowledge of proper diarrheal treatment. However, 35 percent prescribe antidiarrheals more frequently. Once again, this suggests a sadly high propensity to dole out antidiarrheals.

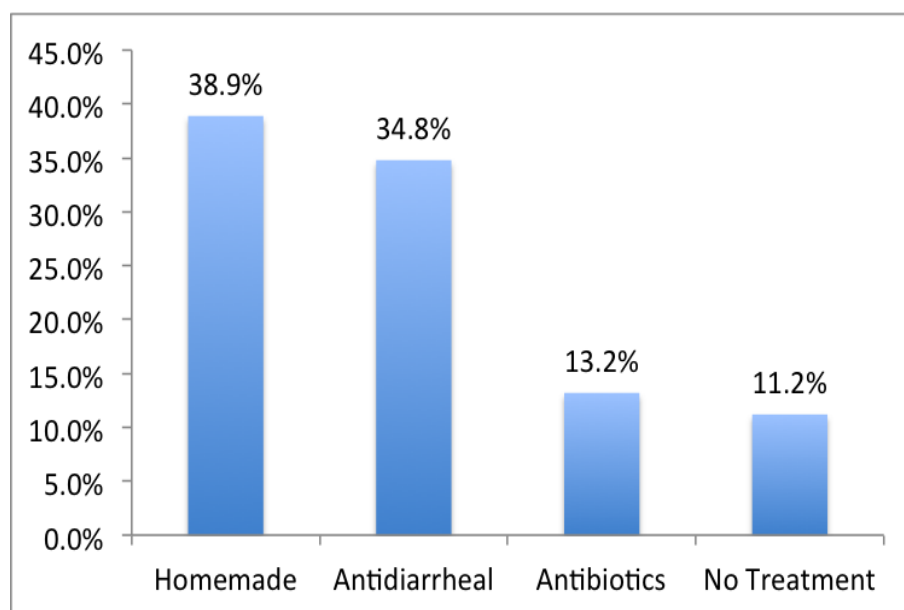


Figure 3.9: Most Frequently Provided Treatment When ORS is Unavailable

Health professionals working in Kenyan dispensaries are highly competent with regards to best practices in treating diarrhea. There is no reason to believe that stockouts of ORS occur because workers simply do not know that they need to order it.

The problem of stockouts is not isolated to ORS. In fact, it is occurring with most essential medicines in Kenya. The Kenyan Ministry of Health produces a list of essential medicines that all medical facilities are required to have on hand at all times. Dispensary workers were asked to look at a list of essential medicines, and estimate if they had all, more than half, about half, less than half, or none of the medicines

on the list. The handout that was given to respondents by my enumerators can be seen in Appendix K. Their responses (Figure 3.10) indicate that access to essential medicines is low. 61 percent of respondents indicate that they have less than half of the essential medicines, and 19 percent of respondents report that they have about half. This means that four out of five dispensaries in the sample have only half or less of the medicines that they are required to have on hand by the Ministry of Health.

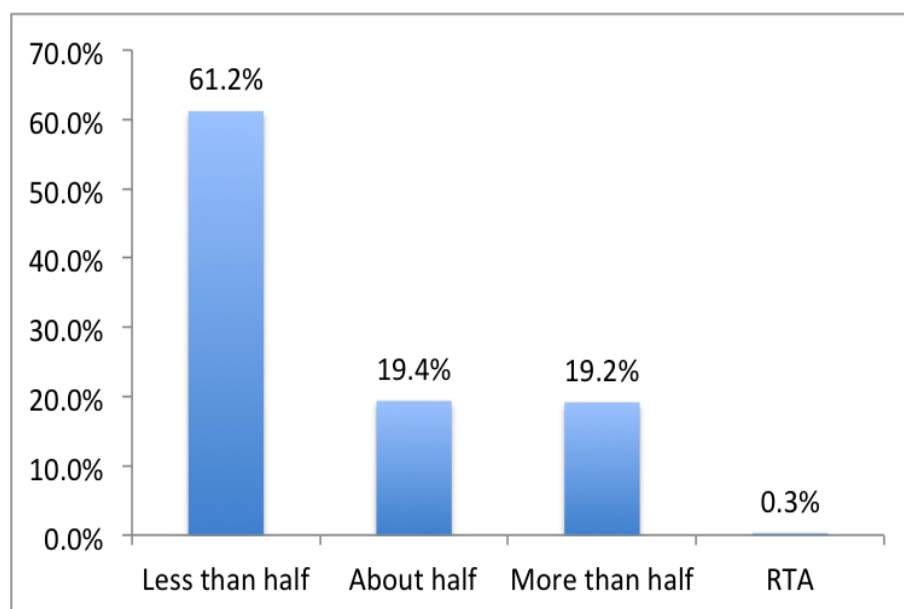


Figure 3.10: Essential Medicines Currently In Stock: Binned Responses

I also asked dispensary workers to tell me if the supply of essential medicines had improved or gotten worse over the previous two years. The intention of this question was to gauge if this particular level of service delivery has improved since devolution. More than half of respondents indicate that the supply of medications has gotten worse in the previous two years; suggesting that devolution is not having the intended impact on the delivery of health services.

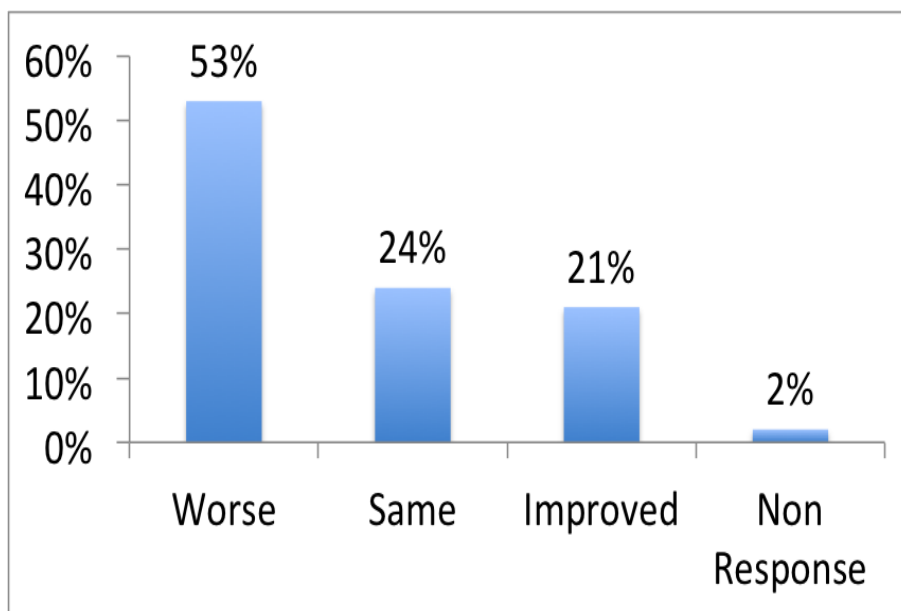


Figure 3.11: Two Year Trend of Essential Medicine Supply

I have given evidence of a systematic lack of medicines in Kenyan dispensaries. This problem exists despite a high (or at least adequate) level of competence of the employees that run these facilities. Why are medicines not being delivered to the workers who order them? I asked dispensary workers why stockouts occurred in an open-ended question. They were allowed to state whatever they wanted and could list up to three mentions. When totaling the number of times that each response was mentioned, the majority of dispensary workers believe that “poor supply” is the primary reason that stockouts occur. The second modal response is that diarrheal incidence has increased in recent years, but many more health workers believe that something in the supply chain is to blame. I believe that dispensary workers submit orders for more ORS, but do not receive what they request.

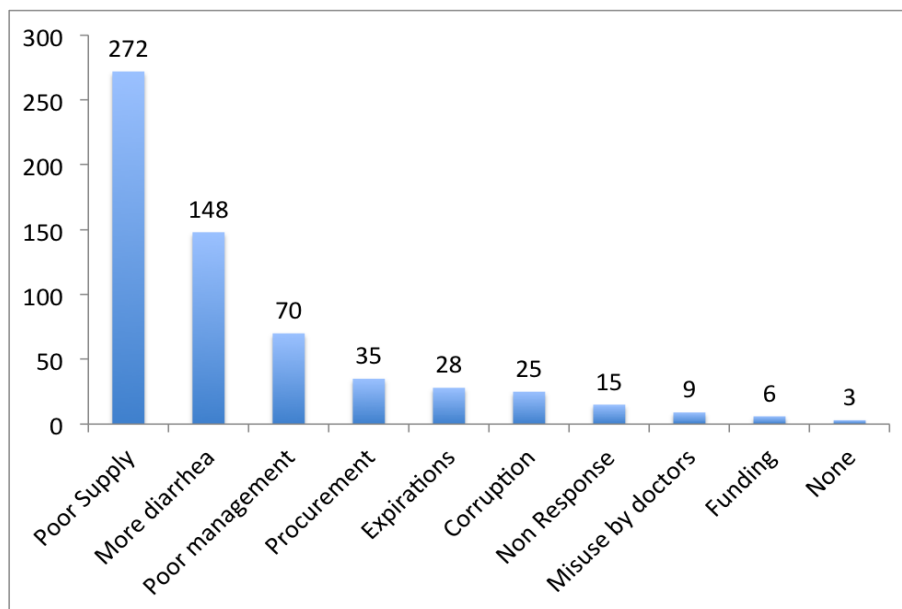


Figure 3.12: ORS Stockout Explanation: Total Mentions

More than half of respondents believe that there is a problem with the supply of medication in the country. They note that they send in requests for more medications but do not always receive what they request. I asked dispensary workers what proportion of their order they normally receive when they request more ORS. Figure 3.13 shows that 35 percent receive about half, 22 percent receive less than half, and 1 percent receive none of their ORS orders. Summing these responses, nearly 60 percent receive half or less of their orders. This means that if a dispensary orders 1,000 sachets of ORS, they expect to receive about 500 or fewer.

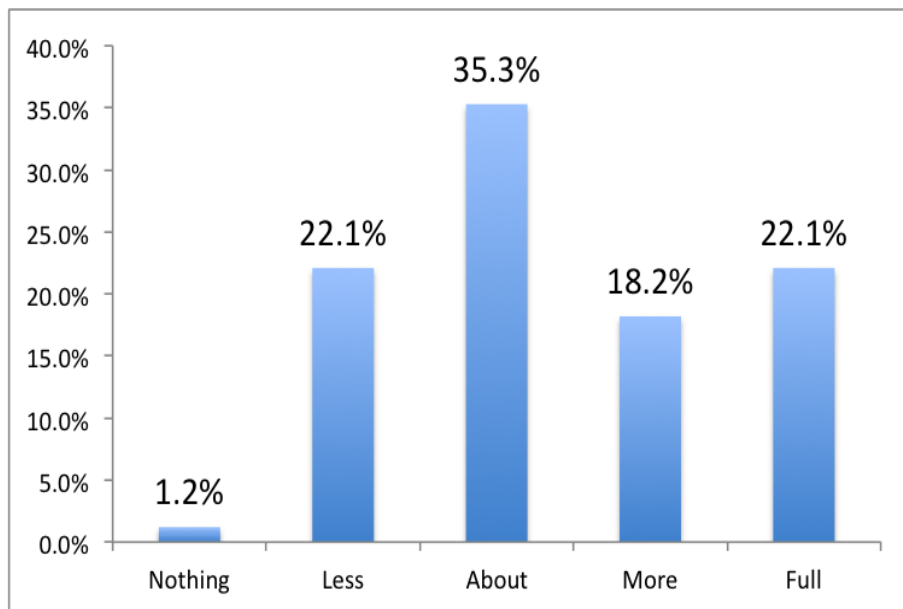


Figure 3.13: Typical Proportion of ORS Order Received

I asked if this was typical for all medicines; questioning how confident each dispensary worker was that they would receive the full amount that they ordered. 47.6 percent of respondents are in the “doubtful” category, answering either “very doubtful” or “somewhat doubtful” (see Figure 3.14).

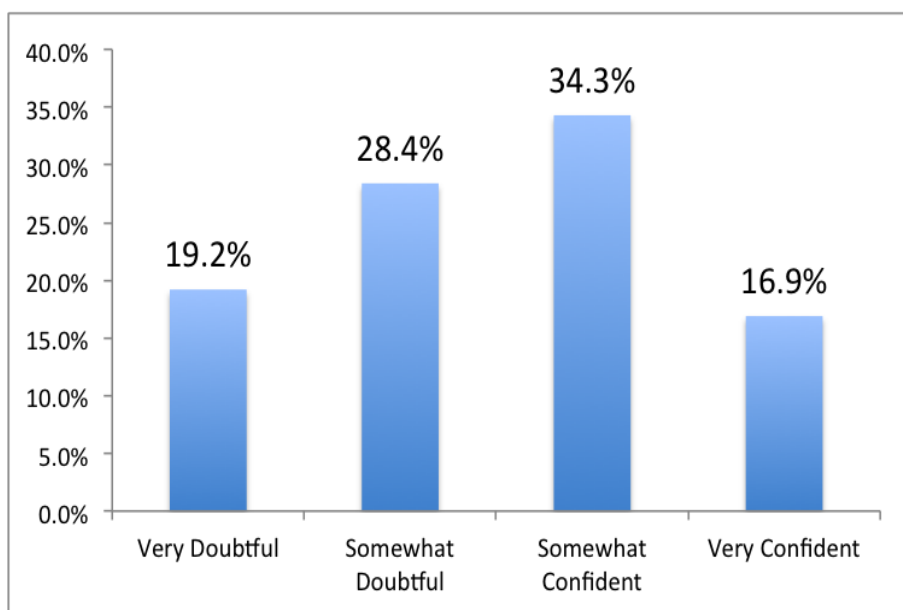


Figure 3.14: Confidence in Receiving Full Order of New Medicines

Because dispensary workers believe that they will not receive the full amount of their orders, I anticipated that they would intentionally order more ORS than they need. Keeping with the same hypothetical, if a dispensary needs 1,000 sachets of ORS, it is rational to order 2,000 in hopes that at least 1,000 arrive. One-third of respondents admit that they (or their dispensary) have intentionally over-ordered ORS in the past. This practice creates a logistical problem for Kenya's medical supply chain. If one-third of dispensaries over-order drugs, it creates an environment in which supplies could run out before every dispensary gets a shipment.

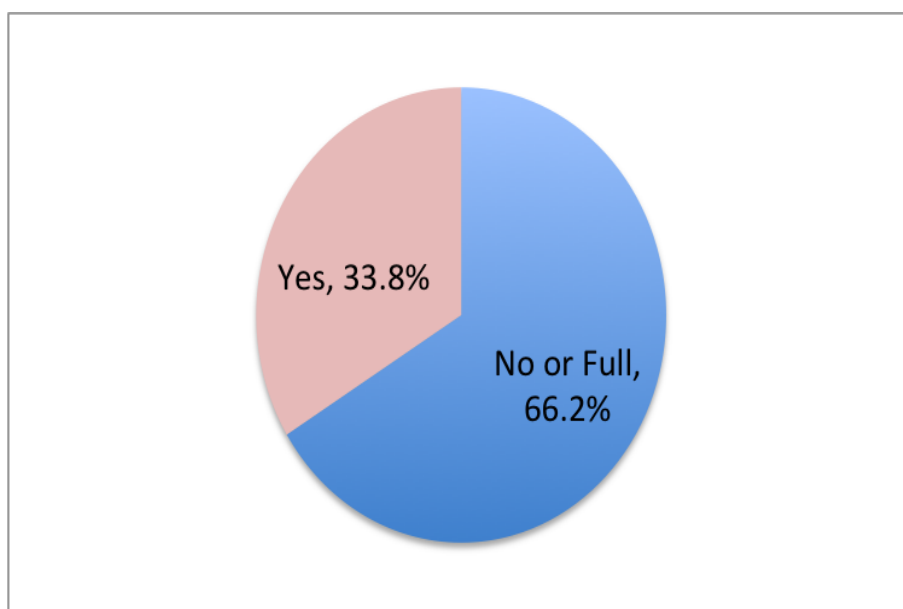


Figure 3.15: Dispensaries That Have Over-Ordered ORS

3.5 Conclusion

The primary conclusion of this chapter is that there is a systematic failure in supplying ORS to dispensaries in western Kenya. This systematic failure is not a result of dispensary insubordination as dispensary workers do submit orders for new medication as is required in the pull system of distribution. The failure of supply is happening at a level above the dispensary. 61.2 percent of dispensaries report

having less than half of essential medicines in stock. 19.4 percent of dispensaries have about half of the list in stock. The summation tells us that less than 20 percent of dispensaries have the majority of essential medicines in stock. Less than 6 percent report having every medicine on the list in stock. Dispensaries order more medications from their county ministries of health, but do not receive the amount they request. What is causing this failure of delivery?

The problem is particularly severe for diarrhea's gold standard of treatment (ORS). 40 percent of the audited dispensaries were completely out of stock of ORS at the time of the study. 38 percent of dispensaries had been out of stock of ORS for at least half of the previous 12 months, suggesting that this is a pervasive problem. 55 percent of surveyed dispensary workers believe that the primary challenge to preventing diarrheal mortality in Kenya is the lack of supply of ORS. When asked about the poor supply of ORS, 307 respondents state that these occur because of some failure in the supply chain, 272 of which suggest that the break in the supply chain is happening *after* KEMSA had procured the stocks. Thus, the prevailing belief is that ORS is in stock at KEMSA, but is not finding its way to local dispensaries.

So far in this dissertation, I have shown that Kenyan people have a demand for ORS, and the dispensaries order ORS on their behalf. However, for some reason, the supplies are not being delivered to the facilities that need them. Why is this failure of delivery occurring? In the following chapters of this dissertation, I am going to show that local politicians do not allocate money to the procurement of medication for their wards. Instead, politicians allocate money to highly visible health projects such as new facilities.

Chapter 4

Health is Political

4.1 Introduction

This chapter will show that health is a politically salient issue in Kenya. Chapters 2 and 3 of this dissertation showed that Kenyan citizens demand ORS and yet it is largely out of stock in local dispensaries. We can conclude that stockouts of ORS are a failure of government provision because the county government is unequivocally responsible for guaranteeing stocks of essential medicines in Ministry of Health facilities. Is it also a failure of government responsiveness? In order to show that politicians in Kenya are not responding to the demands of their constituents, I must first show that Kenyans demand their politicians to deliver ORS. While Chapter 2 showed that Kenyans have a demand for ORS as parents, this chapter will show that they have a political demand for child health services as voters.

The transition to democracy in Africa was anticipated to increase the accountability of politicians to voters and thus increase the quality of governance (Lake and Baum, 2001). This belief was common within political science academia as well as the aid sector (the Bretton Woods institutions). However, later research

found that the benefits of democracy could be undermined when elections were not genuine representations of the people's preferences (if votes were determined because of ethnic allegiance or clientelism, or if the election as a whole was tainted by fraud) (Lawal, 2007). The academic narrative then shifted to pointing to weak electoral institutions as an explanation for Africa's lack of development (Alence, 2004). Africans were painted as individuals who voted primarily for their ethnic ally (Barrows, 1976; Easterly and Levine, 1997) or in exchange for a cash handout (Jensen and Justesen, 2014; Vicente and Wantchekon, 2009), not as people who fundamentally understood the issues at hand. In this chapter, I show that Kenyans are issues voters that possess a high degree of knowledge regarding their local politics. In an original survey, I investigate which political issues Kenyans care about, finding that health is highly salient. Via a survey experiment, I show that a Kenyan politician's voteshare is likely to increase by 17 percentage points when she adds a pledge to decrease child mortality to her campaign. In the next chapter, I confirm my results with data from independently conducted interviews of local politicians in Kenya.

In Chapters 2 and 3, I showed that Kenyans recognize child morbidity and mortality as major problems. This chapter will show that Kenyans attribute that problem to politicians and partially decide their vote based on which politician they believe is most likely to decrease child mortality. The hope of this chapter is to impress upon its reader that health is an important factor in Kenyan elections. Chapter 5 will then show that politicians seek to meet this demand for health services in counterproductive ways. Politicians decide which health services to provide based on the visibility of the project; as visible projects send a signal of their dedication to health to a broader audience. As a result of wasted expenditure on highly visible projects, too few funds remain to provide standard, highly

effective, low-cost treatments such as oral rehydration solution.

4.2 Research on the Determinants of African Vote Choice

What do Kenyans (and more generally Africans) consider when deciding whom to vote for? I divide this debate into three camps: the ethnic voter theory, the clientelism voter theory, and the performance voter theory. It is important to note that most of these scholars agree that all of these factors influence voters; each publication simply highlights the effect that a certain factor(s) has on Africans' vote-choice.

Africans are commonly seen as “ethnic voters” in political science literature and international media coverage due to the correlation of ethnicity and vote choice. In the most extreme scenario — where there is perfect voter turnout and perfect correlation of ethnicity and vote choice — elections act as an ethnic headcount (Dickson and Scheve, 2006; Horowitz, 1985). However, while a strong correlation between ethnicity and vote choice exists, it is not because Africans vote purely out of blind loyalty to their group. Rather, scholars have shown that voters rationally collect useful information about their candidate via the candidate's ethnicity (Chandra, 2007; Ishiyama, 2012; Ferree, 2006, 2010; Posner, 2005). Most commonly, voters use ethnicity as a cue of which candidate is most likely to distribute resources to their area. Voters recognize the tendency of politicians to deliver goods to their hometowns and kinship groups, and thus vote for coethnics rather than non-coethnics (Bates, 1983; Hardin, 1995; Ichino and Nathan, 2013a,b; Lindberg, 2003; Posner, 2005; Wantchekon, 2003). Voters may also vote for coethnics if they feel more able to communicate, cooperate, and punish in-group candidates than

non-coethnics (Hardin, 1995; Fearon and Laitin, 1996; Habyarimana et al., 2007; Miguel and Gugerty, 2005).

A second line of argument is that Africans vote based on clientelism or patronage; they vote for the person who is most likely to directly give them money or services. Africans frequently vote for the candidate who gives them the largest monetary gift during the campaign season (Banegas (1998) in van de Walle (2003)¹). Individuals may also vote for the candidate who they think is most likely to deliver goods or jobs to them in the future (Hyden, 2006). “Research into political competition in Africa has highlighted the existence of widespread clientelism, depicted variously as patronage, prebendalism, tribute, or straightforward vote-buying [(Bratton, 2008; Kramon, 2009; Lewis, 1998; van de Walle, 2003)]” (Harding, 2015). Bratton and Kimenyi (2008) and Vicente (2014) explore the effects of vote buying in Nigeria and Sao Tome and Principe respectively. Wantchekon (2003) and Lindberg (2010) respectively explore clientelism in Benin and Ghana.

The last line of argument is that Africans, like voters in the developed world, reelect incumbents who have performed well. In Zambia and Ghana, voters reward politicians who deliver improved economic conditions (Posner and Simon, 2002; Youde, 2005). In 2009, Malawians of many ethnicities voted for Mutharika’s reelection. Ferree and Horowitz (2010) show that voters in Malawi deviated from patterns of ethnic voting in part because Mutharika had provided fertilizer subsidies to farmers regardless of region and ethnicity. In Kenya, voters factor the performance of their incumbents into their voting calculus (Long and Gibson, 2009). Ghanaians similarly engage in evaluative voting behavior, deciding whether to vote for the incumbent or the challenger based on the incumbent’s recent performance

¹“Several case studies of African elections (e.g. Banegas 1998) have alleged cases of vote buying, in which significant segments of the population auctioned their votes to the candidates who were willing to pay the most” (van de Walle, 2003).

(Lindberg and Morrison, 2008, 2005). African voters also determine their vote based on candidates' party allegiances. Hoffman et al. (2009) argue voters judge the performance of previous party representatives, and draw information about current candidates who identify as members of the same party.

4.3 Health Matters Relative to Other Public Services

I align myself with the above scholars who argue that African citizens consider their incumbent's performance record when voting. While the aforementioned scholars argue that "performance" matters for elections in general, little scholarship has delved into how much specific types of services matter for reelection. Research on which policies matter most for African elections is a small and growing field. Harding (2015) shows that Ghanaian voters rewarded politicians who delivered roads to their locality and Harding and Stasavage (2014) show that African voters reward politicians who abolish school fees. In this chapter, I argue that health (and child health) are particularly important factors in Kenyans' vote choice.

Personal health and well being are prerequisites to enjoy other government services. For example, while many voters certainly want their politician to create jobs, a chronically ill person is unlikely to take-up that job. More dramatically, citizens who die are entirely unable to take-up services. In a similar vein, many government services require a healthy workforce to be delivered in the first place. Many government services such as constructing roads, teaching, and providing security require healthy civil servants. Hon. Philip Motunu (Ward Representative of Iana in Kisii County) supported this sentiment in an interview with me:

The first thing is health. Health is paramount. If any citizen is sick, if they are unable to get the required medication, then he or she cannot be able to give services to the nation. Therefore, health is paramount, and we should give it first priority. (Philip Motunu)

While the health of one's child is not a prerequisite for utilizing other government services, it is still of vital importance to most individuals. The first reason that children's health is important to voters is the most obvious: that people love their children and want them to be happy and healthy. This alone might serve as sufficient reasoning for people to prefer politicians to provide health services that protect children's health. However, children's health affects the household's economic status in both the present and the future. In the present, sick children cost money. While health services for children under five are supposed to be free in Kenya, that is not always the case. If a government dispensary is out of stock of ORS, parents may be forced to buy it at a private facility. Even when services are provided for free, the journey to a local dispensary costs time and effort at a minimum. Taking public transportation will also add a financial cost to the journey.

The health of each individual child is even more important when the ailment is contagious. A child infected with a contagious disease is liable to infect their parents and/or siblings. Diarrheal diseases are highly contagious.

Even people without children have incentives to care about the health of their locality's children. Constituents who are principally concerned with national growth should vote for candidates who will protect children's health because children are the future. Sick children cannot go to school, resulting in substandard educations and less productivity as adults. Epidemics of childhood morbidity cause systemic costs to current education and future economic production.

In sum, there are a number of theoretical reasons to believe that Kenyans prioritize child health. I set out to make two points in this chapter. First, I aim to

empirically show that Kenyans know that the government is responsible for guaranteeing child health. Secondly, they are more likely to vote for the politician who signals a dedication to decreasing child mortality.

- $H_{4.1}$ Constituents are more likely to vote for politicians who signal a dedication to decreasing child mortality

4.4 Data

The data for this analysis comes from the same survey that was described in Chapter 2. Please see Chapter 2 for a description of the methods behind this survey. Full drafts of the survey in English and Swahili can be found in Appendix I.

4.5 Political Demand for Child Health Services

In Chapter 2, I showed that Kenyans recognize that diarrhea is a severe threat to their children’s health. However, do they consider diarrhea to be a problem for the country at large? To answer this question I asked respondents “how severe is the issue of childhood diarrhea (passing watery stools) in Kenya?” They overwhelmingly identify diarrhea as a serious problem in their country. 91.4 percent of respondents believe that diarrhea is a “serious problem” and 5.7 percent believe that it is a “minor problem”. Only 0.2 percent answered that diarrhea is “not a problem”². These numbers are consistent with the fact that diarrhea kills more Kenyan children than any other contagious disease.

²The respondents were asked how severe the issue of childhood diarrhea was in their local community; 75 percent said that it was a “serious problem”.

Table 4.1: Perceived Severity of Diarrhea in Kenya

	Freq.	Percentage
Serious problem	919	91.4
Minor problem	57	5.7
Not a problem	2	0.2
DK, RTA	28	2.8
	n = 1,006	

Kenyan's concern about the problem of childhood diarrhea does not imply that people recognize it as a government failure. Thus, I asked respondents if they believed that the "government should be responsible for ensuring the health of Kenyan children". An overwhelming majority of respondents believe that ensuring health of Kenyan children is the responsibility of their government. Ensuring the health of Kenyan children is mandated in the 2010 Constitution; while my survey does not directly ask respondents if they know this, my personal interactions with citizens and the Kenyan media lead me to believe that this is relatively common knowledge.

Table 4.2: Government is Responsible for Guaranteeing Child Health

	Freq.	Percentage
Yes	982	97.6
No	24	2.4
	n = 1,006	

However, this does not necessarily imply that voters prefer their politicians to provide health services relative to other options. I asked respondents which of five options they preferred the government to provide. In an attempt to minimize priming effects, this was the third substantive question of the survey and was asked before the majority of questions about health, children's health, and the healthcare system in general. Where does healthcare stack up in the preference structure of Kenyan parents?

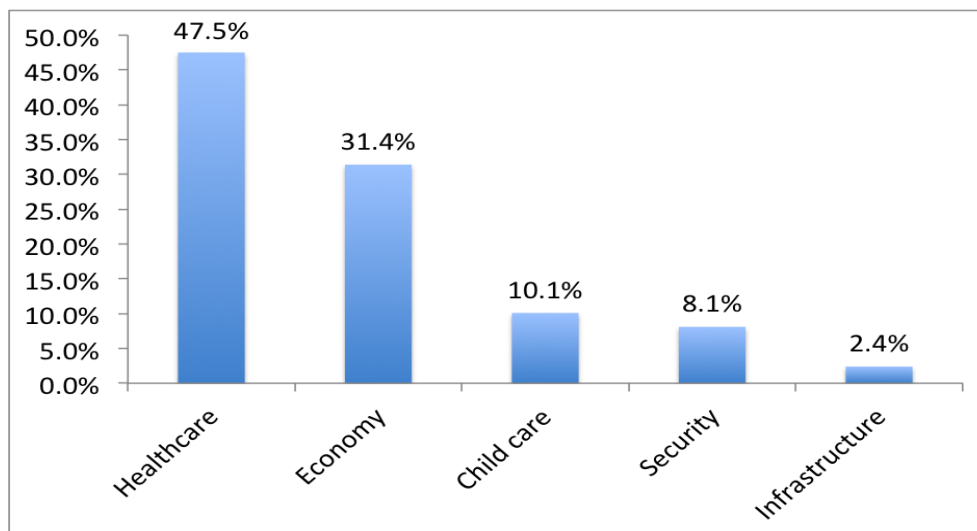


Figure 4.1: Desired Government Services by Category

The modal response is that constituents want the government to address healthcare, with nearly half of the respondents selecting that choice. This suggests that healthcare is an important topic, even relative to other issues that the government is responsible for. The results of this question surprised me, as most literature led me to assume that the economy would be respondents' top choice (Bratton et al., 2011; Lewis-Beck and Stegmaier, 2000). This result also comes in a context when the security situation in Kenya was a highly salient issue. Sporadic electoral clashes had occurred throughout the 2012/2013 campaign cycle as had a number of clashes with the Mombasa Republican Council (MRC) (Long et al., 2013). The survey also took place less than one year after Al-Shabaab took 67 lives and injured 175 at Westgate Mall (Stewart, 2015).

I also asked respondents to give the most serious problem facing their locality in both an open-ended and multiple-choice fashion. The most common open-ended responses were water shortage, poverty, insecurity, diseases/epidemics, and high cost of living.³ In the multiple-choice version of the question, the most common first

³Full results can be seen in Table B.2 in Appendix B.

responses were high cost of living, poverty, poor health of our children, lack of clean water, and poor healthcare.

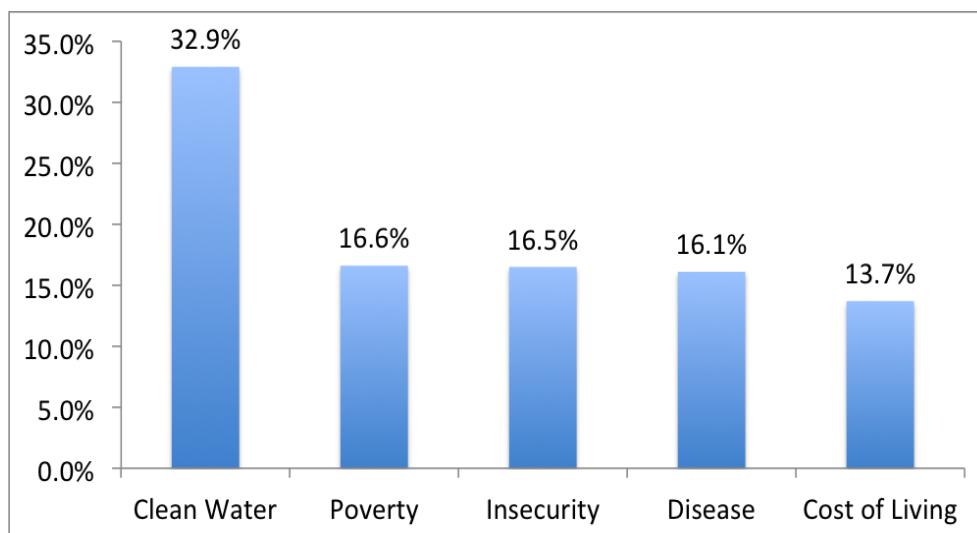


Figure 4.2: Most Important Problem in Locality

As a robustness check, I compare the results of this survey question to results of a similar question in Afrobarometer. My result that Kenyans want their government to address health differs, but is not wholly inconsistent with data from the Afrobarometer. In Round 6 of the Kenyan sample of the Afrobarometer, respondents were asked “in your opinion, what are the most important problems facing this country that the government should address?” and were allowed to give three responses. 22 percent of Afrobarometer respondents answered “health” as one of their three responses. Health was the fifth most common response (when summing the three responses). The four most common responses were “Crime and Security” (40.1 percent), “Unemployment” (31 percent), “Education” (24.8 percent), and “Infrastructure/Roads” (23.1 percent).

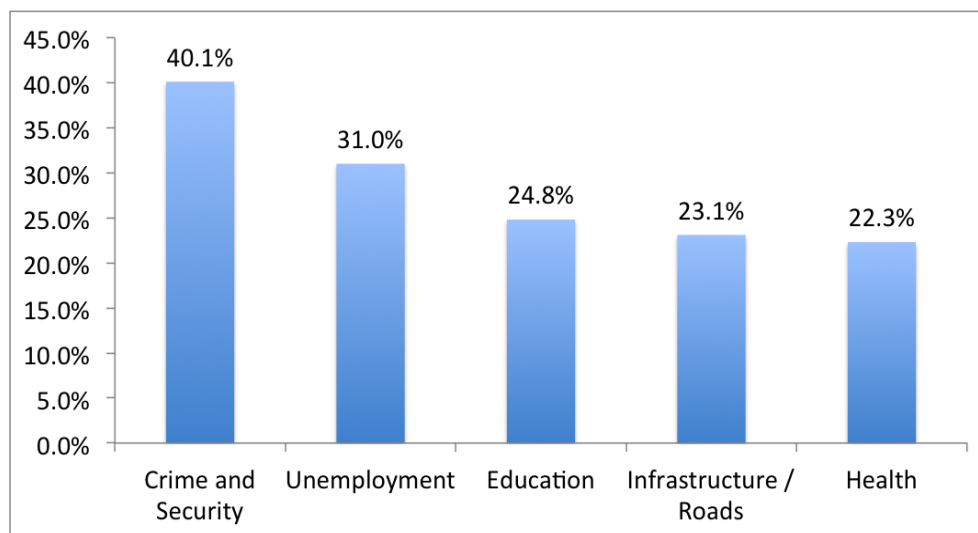


Figure 4.3: Afrobarometer: Most Important Problem that Government Should Address

While the importance of health is different in the Afrobarometer results from my own results, I want to highlight that it is a salient issue in both surveys. While health is only considered the fifth most important issue in the Afrobarometer survey, it still beat out at least 22 other reported issues, and is on the same tier of importance as poverty and security. A complete list of results from this question of the Afrobarometer can be seen in Table C.1 in Appendix C. My results differ from Afrobarometer for two reasons. First, the Afrobarometer question is double barreled, it asks respondents to both answer “what the most important problem is” and “what the government should address.” The problem with asking questions like this is that it is uncertain which clause of the question respondents intend to address. It is possible that Afrobarometer respondents believe that security is the most severe problem facing the country, but that they most prefer the government to address health because they feel that it is the issue for which the government can make the biggest difference.

My survey also differs from Afrobarometer in asking what the government should address by categorizing the issues. In the Afrobarometer question,

respondents were separately able to answer “health”, “HIV”, and “sickness/disease”, all of which are closely related. On the economic side, Afrobarometer respondents were able to answer “unemployment”, “poverty/destitution”, and “management of the economy”. How can respondents reasonably be expected to differentiate between these response options? To overcome this problem, I asked respondents to select one of five categories, and gave some specific issues as clarification. The response options were:

- Healthcare (improved life expectancy children, clean water, sanitation, health facilities, medicines)
- Child care (healthcare and education)
- Economy (high cost of living, poverty, lack of employment)
- Security (crime, threat of Al Shabab attack)
- Infrastructure (roads, electricity)

The differences in results that Afrobarometer and I receive can be explained by these differences in survey design. The important takeaway point is that our general results are consistent: healthcare is seen as a major issue by Kenyans and one which they want the government to prioritize.

Should politicians fear losing reelection if they do not deliver positive health outcomes? While Kenyans clearly link the responsibility of improving healthcare to the government, and wish that the government would address health over other important issues, it does not necessarily imply that constituents factor healthcare into their voting calculus. If Kenyans do not factor the health of their children into their voting calculus, the incentives of politicians would continue to rest with other issues. Via a survey experiment, I show that voters prefer to vote for candidates who pledge to decrease child mortality. Each respondent received the following prompt:

In the following scenario, I will present you with two hypothetical candidates who are running against each other in an election for political office. I want you to listen to what issues they support, and tell me which candidate you would vote for:

Then, each respondent received one of three randomly selected pairs of candidates as options:

- Version 1: Baseline
 - Candidate 1 pledges to create jobs and end corruption.
 - Candidate 2 pledges to decrease the cost of living and build more roads in your local area.
- Version 2: Plus Health
 - Candidate 1 pledges to create jobs, end corruption, and decrease child mortality.
 - Candidate 2 pledges to decrease the cost of living and build more roads in your local area.
- Version 3: Third Control
 - Candidate 1 pledges to create jobs, end corruption, and decrease tribalism.
 - Candidate 2 pledges to decrease the cost of living and build more roads in your local area.

The treatment arms of the experiment were designed to isolate the effect of campaigning on decreasing child mortality. The third version was given to control for the possibility that respondents of Version 2 voted for Candidate 1 simply because she campaigned on three issues versus two. A flow chart of the research design is provided in Figure 4.4

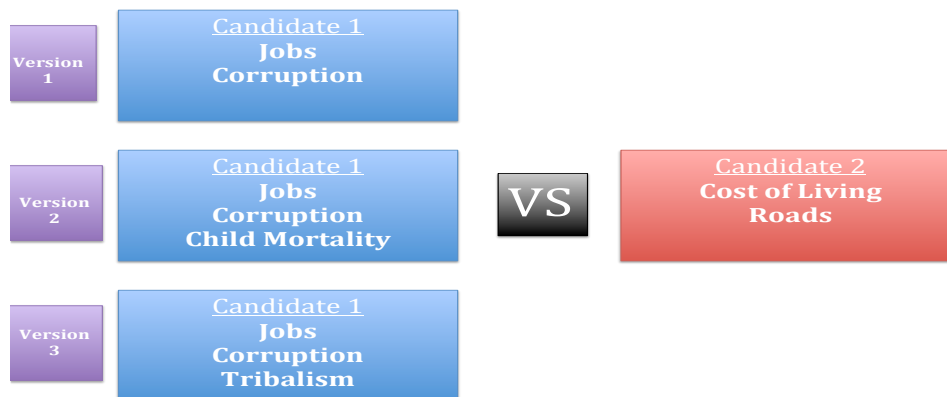


Figure 4.4: Research Design of Survey Experiment

The results show that Kenyan voters prefer candidates who pledge to decrease child mortality, even when controlling for the addition of a third issue. Figure 4.5 shows the voteshare that Candidate 1 received in each version.

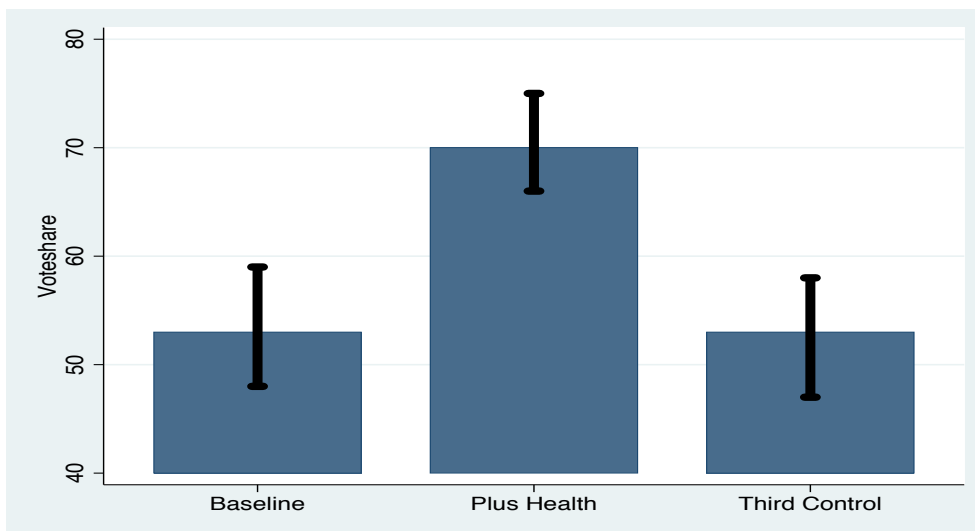


Figure 4.5: Voteshare for Candidate 1

In Version 1, the baseline version, the hypothetical candidates each received close to 50 percent of the votes. In Version 3, the results match the baseline, even after adding the issue of “tribalism” to Candidate 1’s platform (tribalism is an

important political issue in Kenya, particularly in the western counties where this survey experiment took place). Merely adding a third issue failed to bring more votes to Candidate 1. The results of Version 2 show that adding a pledge to decrease child mortality increases Candidate 1's voteshare by 17 percentage points from the baseline version. An unpaired T-test shows that the difference in means between Version 2 and Version 1 is significant beyond the 99 percent confidence level; and shows that adding a pledge to decrease child mortality will increase a candidate's voteshare between 10.0 and 24.2 percentage points (95 percent confidence interval). This shows that child healthcare is an issue for which candidates could be rewarded or punished in Kenya, confirming hypothesis $H_{4.1}$.

4.6 Limitations

The 17 percentage point bump is a substantively large result, suggesting the importance of pledging to protect child health in one's campaign. However, these results are subject to a number of threats.

My findings are particularly susceptible to an external validity threat. In an article that challenges the external validity of survey experiments, Barabas and Jerit (2010) find that results generally only hold when real-world populations are exposed to information by mass media. I argue that the mass media in Kenya regularly delivers information about the health sector. Kenyan newspapers publicize politicians delivering health services on a daily basis. Furthermore, as I will show in the following chapter, Kenyan politicians include promises to improve the health sector in their electoral campaigns.

Barabas and Jerit (2010) also argue that even within population subsets that receive the treatment, effects in the real world are smaller than in a survey experiment because of the noisiness of real world politics. There is certainly a high degree of noise

in the Kenyan campaign process, with politicians pointing to problems in education, development, and corruption in addition to healthcare. I acknowledge that a real candidate would not likely yield a 17 percentage point bump simply from pledging to decrease child mortality; however I do believe that a positive and significant bump would occur in a real campaign environment. Furthermore, an incumbent politician who does manage to significantly decrease child mortality will likely campaign heavily on that success. This research suggests that such a politician would benefit from that strategy.

A second threat is that survey experiments do not exactly replicate real elections. However, I believe that a survey experiment was the best tool to use as it allowed me to isolate the effect of campaigning on child mortality. Research during election cycles pose obstacles of their own, in particular the confound that respondents may confuse hypothetical candidates with real candidates who seem similar. I have little reason to believe that the respondents of my survey believed the either candidate was modeled off of a real person.

Survey experiments are successful research tools that have been utilized by other scholars in the field. Aguilar et al. (2015) and Cunow (2015) use experiments to show that Brazilian voters rely more heavily on racial cues when more candidates appear on the ballot. Adida et al. (2016) use a survey experiment in Benin to show that cueing on the first lady's ethnicity elicits a higher vote-share from her coethnics.

Lastly, the results of this survey experiment suffer from one of generalizability to the population of western Kenya. My sample was restricted to parents. My sample also excluded constituents in deep rural areas. It is conceivable that other segments of the population care about different issues, and that the population in this sample is not influential in elections. If this is the case, politicians are incentivized to ignore the issue of child health in favor of other issues.

I address all of these threats by interviewing local politicians. The results of those interviews cross-validate my findings that health is an important electoral issue in Kenya. In Chapter 5, I will show that politicians confirm that campaigning on health is vital for winning reelection. These statements from politicians demonstrate that voters consider health in real elections, that they care about health in an environment where many issues are campaign topics, and that enough voters care about health that it is a vital electoral issue in Kenya.

4.7 Conclusion

Chapters 2 and 3 showed that child health is a problem in Kenya and that constituents recognize it as a problem. This chapter showed that voters attribute the responsibility of improving child health to politicians; with over 97 percent of respondents saying that the government should be responsible for guaranteeing the health of Kenyan children. Health is important enough to Kenyans that it is a factor in their decision of whom to vote for. The combination of these factors means that health is a salient political issue in Kenya. If politicians want to win reelection, they need to signal that their dedication to providing for health exceeds their opponent's dedication. But how can they successfully send this signal and differentiate themselves from opposition candidates who also promise to deliver health services? The next chapter will discuss the primary strategy that Kenyan politicians are utilizing to send this signal. I will also show that implementing this strategy inadvertently diverts resources away from the most needed services in Kenya's public health sector.

Chapter 5

Visible Health Services Win Votes

5.1 Introduction

The purpose of this chapter is to suggest that Kenyan politicians are neglecting to supply ORS; and thus explain why 5,400 children are dying from diarrhea in Kenya every year. In this dissertation, I have shown that Kenyans will administer ORS to their children when it is available. However, ORS is systematically unavailable in Kenyan dispensaries despite health workers submitting orders for new deliveries. Voters attribute the responsibility of child health to politicians and prefer to vote for politicians who campaign on health. Since voters will select the candidate whom they believe will provide the best health services, politicians are incentivized to signal their dedication to health. Given all of these findings, why are 5,400 Kenyan children dying from diarrhea every year? Why are politicians not providing the improved child health services that constituents are demanding? In this chapter, I¹ will show

¹Throughout this chapter I will continue to refer to myself as a singular author (“I”) as the author of this dissertation and the primary research and sole composer of this chapter. However, Alexandra “Sasha” Voight has been granted coauthorship of this chapter due to her contributions in thinking through the concepts of this chapter and the creation of the newspaper dataset that is used. I also owe a great debt to Celia Breuer, who worked as a research apprentice to complete that dataset.

that the demand for improved health services acts as both a call to action and an obstacle to action. The desire for reelection creates a perverse incentive for politicians to provide services that make it *appear* as if they are solving the child health crisis rather than actually fixing it.

Politicians are aware that voters prefer candidates who pledge to decrease child mortality. However, if every candidate is going to make the same promise, how can an incumbent differentiate themselves from their opponents? In this chapter, I show that politicians signal their dedication to health by providing visible services.

Based on the findings in Chapter 4, I assert that voters will reward the politician whom they believe is the most likely to improve health. Politicians win these votes by signaling that they are the most likely to improve health. I define a signal as the information that is perceived by voters (which might differ from actual health outcomes). Thus, when deciding which health policies to deliver, politicians choose the services that send the loudest and clearest signal. I conceptualize the “loudness” of a signal by the number of people that it reaches. I define the “clarity” of a signal by how easily constituents attribute it to a particular politician. In the context of the Kenyan health system, building new infrastructure is a clear, loud signal of a representative’s devotion to health. Procuring medicines such as ORS, on the other hand, is a significantly weaker, noisier signal as the action is only visible to the constituents who acquire the drugs. The result in Kenya is that politicians allocate a disproportionate amount of funding to new infrastructure, and badly underfund medicines and staff.

I develop the argument of this chapter using two methods. First, I show that politicians deliver new infrastructure projects despite evidence that the procurement of medicine and staff are the greatest areas of need. I make this point using an independent dataset of every health article from Kenya’s two leading newspapers

from August 2014 to March 2016. Second, I use interview data to show that reelection concerns are the causal mechanism leading to the over-allocation of funds to visible projects. These interviews were conducted in the summer of 2015.

5.2 Theoretical Motivation

de Kadt and Lieberman (2015) express surprise at their findings that African voters (in Botswana, Namibia, and Lesotho) failed to reward their politicians for positive service provision. In fact, they find that incumbents in constituencies where more households had received better service delivery (measured as in-home water, in-home toilets, and refuse collection) were significantly less likely to win reelection. The authors provide two potential explanations: “first, that citizens who receive services are more likely to change their preferences and expectations for what they want from government, which in turn leads to dissatisfaction with the incumbent party; and second, that the process of receiving new services puts citizens in closer contact with the workings of government, which leads them to perceive more corruption, which turns them away from the incumbent” (de Kadt and Lieberman, 2015). I argue for a third explanation; that the services that de Kadt and Lieberman are were not widely visible to the community. The services they chose to measure are contained within households. I postulate that the households that received new toilets and water were much more likely to vote for that incumbent; however the rest of the community did not see that the incumbent had delivered services and thus voted for her challenger. I believe that politicians who provide services that are visible to the entire community are more likely to win election.

A variety of literature explains that politicians provide services that are more visible in order to enhance their odds of reelection. These scholars (as do I) assume that politicians are reelection minded; that their primary goal is to win reelection.

As such, each politician is compelled to convince her voters that she delivered better services than her opponent would have. To do this, she provides services that constituents clearly attribute to her work, and she claims credit for services delivered to her constituents even if she was only partially responsible for their delivery.

Mayhew (1974) defines credit claiming as:

Acting so as to generate a belief in a relevant political actor (or actors) that one is personally responsible for causing the government, or some unit thereof, to do something that the actor (or actors) considers desirable. The political logic of this, from the congressman's point of view, is that an actor who believes that a member can make pleasing things happen will no doubt wish to keep him in office so that he can make pleasing things happen in the future. The emphasis here is on individual accomplishment (rather than, say, party or governmental accomplishment) and on the congressman as doer (rather than as, say, expounder of constituency views). Credit claiming is highly important to congressmen, with the consequence that much of congressional life is a relentless search for opportunities to engage in it. (Mayhew, 1974)

I argue that the key element of Mayhew's quote is that politicians are "generating a belief" that they did something. Voters *rarely* have perfect information about the actions of their representatives, and certainly do not have information about the range of actions that the politician hypothetically could have taken. Thus, the key to winning reelection for a politician is to make her constituents *believe* that she did the best job possible and provided the most services possible.

Cox and McCubbins (1986) illustrate that credit claiming is often seen as a "congressman cutting the ribbon to a new dam in his district, the dam being viewed as a good for the whole district (paid for by the tax dollars of other districts)." While a number of politicians voted for the dam to be located in that region, a particular congressman will be seen cutting the ribbon in the next morning's newspapers. Later in this chapter I will show that this is frequently the case in Kenya; politicians make

attempts to have their name and photograph published in articles about major health projects, even when they are not the primary provider of the service.²

Politicians can claim credit for projects by being the ones to cut the ribbon even if they did not contribute to the delivery of the service. Most often, politicians are the ones responsible for delivering the service. When politicians have discretionary funding, they have a range of services that they can deliver. While they would be the sole provider of any of these services, each project does not yield the same amount of electoral credit. Because of this, politicians deliver the services for which they will gain the greatest amount of credit from voters.

Keefer and Khemani (2005) argue that politicians receive the most credit when the service itself is observable and targetable. For the purposes of this chapter, I use the word “visible” as synonymous with Keefer and Khemani (2005)’s use of the word “observable.” They argue that politicians receive more credit for offering visible services for two reasons; 1) campaign promises about a visible good are more believable to voters *ex-ante* and 2) *ex-post*, voters are more likely to reward the delivery of visible services because they lack access to information on the delivery of broader, less visible promises.

Keefer and Khemani (2005) argue politicians do not pledge to deliver broad improvement of services as “only a few voters believe these promises”. Rather, “politicians prefer to promise narrow targetable services, such as infrastructure, rather than improvements in broad public services” because constituents are more likely to believe that visible services will be delivered. Keefer and Khemani (2005) argue that pledges for visible services are perceived as more credible because constituents can verify whether or not the pledge is fulfilled. This guaranteed verification essentially commits the politician to following through with delivery of

²This happens frequently when the project is being funded by a private, foreign donor.

the service. For example, when a politician pledges to construct a new building in his ward, a voter can accept that promise knowing that it will be easy to punish the politician for a lack of delivery. On the other hand, voters may not trust their ability to know when a politician has delivered on a promise to keep dispensaries throughout their ward fully stocked with medicine. This sentiment is repeated in Keefer (2007) when he states that “it is difficult for citizens to identify how political actions have affected their health or the educational progress of their children; it is easy, on the other hand, for them to assign political responsibility for the appearance of electricity to or roads near their homes.”

Keefer and Khemani (2005) go on to argue that citizens do not reward the delivery of broad non-targetable projects because they lack the information to hold them accountable.

Because of these information problems, politicians prefer to expend resources on constructing and staffing schools and clinics, even if they remain empty and unused, for example, than on improving the quality of services. Politicians get some credit for easy-to-observe buildings and jobs but little or no credit (or blame) for the quality of services available. (Keefer and Khemani, 2005)

I argue that when a citizen sees that half of a building has been constructed, she knows that the politician has delivered on half of his promise. When a citizen receives medication, she only knows the politician has delivered on a tiny fraction of the promise to procure medication for the entire ward. In the example of a patient receiving ORS from her dispensary, the patient has little way of knowing if the ward is fully stocked. It remains possible that the individual dispensary is not stocked with ORS at other times of the year, that the individual dispensary is not stocked with other essential medicines, or that other dispensaries in the ward lack ORS and other essential medicines.

In the context of health in Kenya, I show that politicians get more credit for

delivering new infrastructure (dispensaries) than guaranteeing the supply of medicine. This is because most people within a constituency will physically see a new building whether or not they utilize its services. On the other hand, only the individuals that receive medicine will recognize that it is available. In Kenya, the credit given to politicians for building new infrastructure is exacerbated by a common practice of painting the politician's name on the exterior of the building, so that all constituents know whom to credit. Broader services, such as an influx of medicine or medical staff do not carry the politician's name with them. By my definition, a politician increases the clarity of the signal of his dedication to an issue by including his name on the delivered service.

Keefer and Khemani (2005) point out that visible projects send a louder signal to each voter individually. I argue that the signal sent by visible projects also reaches a greater quantity of voters. I define "visible" services as services that can be seen by someone driving on the road; this would include hospitals and ambulances, but not x-ray machines, salaries, and medicines as one has to go inside the building to view these services. Thus, non-visible projects are only seen by individuals who enter health facilities and use certain services, whereas visible projects can be seen by anybody who passes by the medical facility.

Building on the extant literature, I argue that visible services yield greater electoral returns than non-visible services for three separate, complementary reasons. First, promises to deliver visible services are taken as more credible by voters. Second, the delivery of a visible good makes a larger impression on each individual that receives the signal. Third, the signal reaches a greater quantity of individuals.

This problem is potentially exacerbated in democracies because of the added need for politicians to be concerned about the perceptions of their constituents. Mani and Mukand (2007) state that:

if elections are intended to enable voters to select the most competent

candidates, then resource allocation will be biased against public services whose outcomes are more noisy and harder to use to assess politician ability, and politicians will have an incentive to provide services that are better signals of high ability. Mani and Mukand (2007) in Keefer and Khemani (2005)

As the strategy for reelection is to shape constituents' perceptions, politicians' optimal strategy is to provide services that send a loud, clear signal that they invested resources into the issue that their constituents base their vote on (in this case, health). A prominent, visible project sends a signal that is both loud and clear. Small, widely dispersed projects send a considerably weaker and noisier signal. Mani and Mukand's quote points out that reelection minded politicians are incentivized to provide the more visible projects; whereas government officials that do not face reelection (as in non-democracies) can deliver the most needed projects, regardless of constituent perceptions. Keefer (2007) explains that this may be why poor democracies do not provide better (and sometimes provide worse) services than poor non-democracies.

I expect that politicians deliver more visible services, for the specific reason that those services yield more votes for the incumbent.

- $E_{5.1}$ Politicians are more likely to deliver visible services than non-visible services
- $E_{5.2}$ Politicians deliver visible services because those are likely to yield greater electoral benefits than non-visible services

5.3 Discretionary Health Budgets in Kenyan Counties

Kenyan counties are an especially good place to study the services that politicians deliver because of the unusual amount of discretion that politicians

possess. In many counties, the health budget (after salaries are paid) is divided equally amongst the wards, and each Ward Representative is left to decide how the health budget is spent for his constituents. The politicians who informed me of this policy said that it came about because each Ward Representative was concerned about being able to target services to her own constituents. If the County Assembly decided to build a new hospital as an aggregate whole, there would be infighting as to which ward was given the honor of housing the new hospital. The politicians said that voters in the recipient ward would reward their individual representative, whereas the voters in other wards would punish their representative for failing to bring such a valuable development project to their area. Hon. George Bibao, the Chair of the Health Committee in Kisii, agreed that this had been a contentious issue:

We come from different areas. [Each Ward Representative is] elected from a certain ward; he wants to deliver services to [that] specific ward. They are fighting for a facility for their own people. (George Bibao)

As such, each Ward Representative is given an equal amount of discretionary health funding to spend on his constituents referred to as Ward Development Funds (WDF) for health. The amount of money that goes to each Ward Representative depends on the health budget for that county. In Kisii, each Ward Representative has 3 million Kenyan shillings (about \$30,000) to spend on health each year. In Homa Bay, each Ward Representative has 1 million Kenyan shillings (about \$10,000) to spend on health each year.

This policy is not uniform across Kenyan counties. For instance, in Nairobi and Kisumu, Ward Development Funds are not subdivided by issue (such as a separate fund for health). While Nairobi and Kisumu do not dictate how much each Ward Representative's WDF is awarded to health, they do still give each Ward Representative an equal amount of Ward Development Funds. The politicians who

were interviewed in Kisii and Homa Bay believe that Ward Development Funds for Health is a common practice in Kenyan counties, but were unaware of how many counties divided their budget in this manner. Hon. Bibao believes that most counties have a separate WDF for health.

5.4 Disproportionate Delivery of Visible Services

One of the major purposes of my research is to describe which health services are needed in Kenya and which services politicians ultimately provide. Both need and delivery proved difficult to quantify. Assessing which services are needed throughout Kenya requires an extensive national survey of the health system. Surveys such as the Demographic and Health Survey can demonstrate which diseases pose large burdens (such as diarrhea), and can also demonstrate levels of ORS use, but they do not give information as to *why* children are not receiving ORS. As this dissertation has shown, the underlying cause of low ORS administration in western Kenya is a lack of supply in local dispensaries.

In this section, I show that staffing and medicine are the greatest needs in the Kenyan health sector. I also show that despite those needs, Kenyan politicians prefer to provide medical infrastructure projects to any other form of good or service, and infrequently exert extra resources towards staffing or medicines. I use Pearson Chi Square tests of independence to show proof of concept that politicians deliver more visible services for which they can claim credit. I show that politicians are more likely to be named and pictured in articles about health solutions than problems. I also show that politicians are more likely to be named and pictured in articles about visible projects than non-visible projects.

Theoretically, the best data on what health services are being provided would have been health expenditure reports from each county in Kenya. The second

best data would likely be an itemized list of budget allocations, despite the fact that counties reportedly spend money in ways that divert from the proposed budget. Budget data is extremely difficult to come by in Kenya. Expenditure reports appear to be non-existent. I worked with members of the Ministry of Health and politicians in each of Kisii and Homa Bay counties to acquire both expenditure reports and budgetary information to no avail.

As such, I measure need and delivery of health services through an independent collection of newspaper articles in Kenya. Kenya's newspaper coverage is fair, independent, and wide-reaching. In Round 6 of the Afrobarometer³, Kenya had the sixth highest percentage of respondents who at least occasionally received news from the newspaper (46.2 percent.) Kenyan newspapers regularly discuss needs in the health system and frequently cover services being delivered. I acknowledge the limitations of using the newspaper as a datasource. First, it is unlikely that the newspaper is able to report every problem and project that occurs in Kenya's health sector. Secondly, there may be biases in the types of projects that get reported; certain articles may illicit wider readership than others. The possibility that there is bias in reporting supports my theory. If certain services get media coverage and others do not; politicians are incentivized to provide the services that get published. Because new buildings make for catchier articles than new medicines, media reporting amplifies the incentives of politicians to provide visible services.

I do not claim to paint a perfect picture of the Kenyan health sector via newspaper data. What I intend to do is to show a disparity in which health services are most needed and most supplied in Kenya. The newspaper data illustrates such a stark asymmetry in these issues that I am confident that my conclusions are correct: staffing

³24 countries have data for Round 6 of the Afrobarometer.

and medicines are major problems in the Kenyan health sector and most government projects do not address these issues. Instead, politicians invest resources in building new infrastructure. Furthermore, I validate my findings from the newspaper data with interviews of local politicians and experts in the Kenyan health sector.

With the help of two research apprentices through UCSD Political Science’s “Research Apprenticeship Program”, I collected every article pertaining to health from *The Standard* (one of Kenya’s two major newspapers) every day for 19 months from July 2014 through March 2016. I also collected every article pertaining to health from *The Daily Nation* (Kenya’s other leading newspaper) starting from March 2015, to verify that the same events were being captured.⁴ My team coded each article along several dimensions to create a dataset where each observation was a single newspaper article. Variables in the dataset include whether the article was describing a problem in Kenya’s public health system or a solution to one of those problems, if the action of delivering the solution has started, and if each solution is visible or non-visible. We coded visible projects as any project that can be seen from the road. Thus, buildings and ambulances are coded as visible, but hospital beds, x-ray machines, dialysis machines, and medicines are not because one has to enter the facility to see them. Coding rules for the dataset can be seen in Appendix G.

The current dataset has approximately 2,100 independent articles about health in Kenya. Of those, there were 1,241 articles describing problems in Kenya’s health sector and 1,028 articles describing solutions to those problems (see Figure 5.1). I coded each article as to which issue it was primarily addressing, including staffing, medicines, infrastructure, mosquito nets, HIV/AIDS and a few others (a full list can be seen in Table E.1 in Appendix E). For the purposes of this chapter, I analyze articles that focused on medical infrastructure, medicines, and staffing, as those were

⁴Many thanks to Paul Agonda for his dedicated research assistance on this aspect of the project.

the most common types of services offered by politicians in these articles (see Table E.2 in Appendix E).

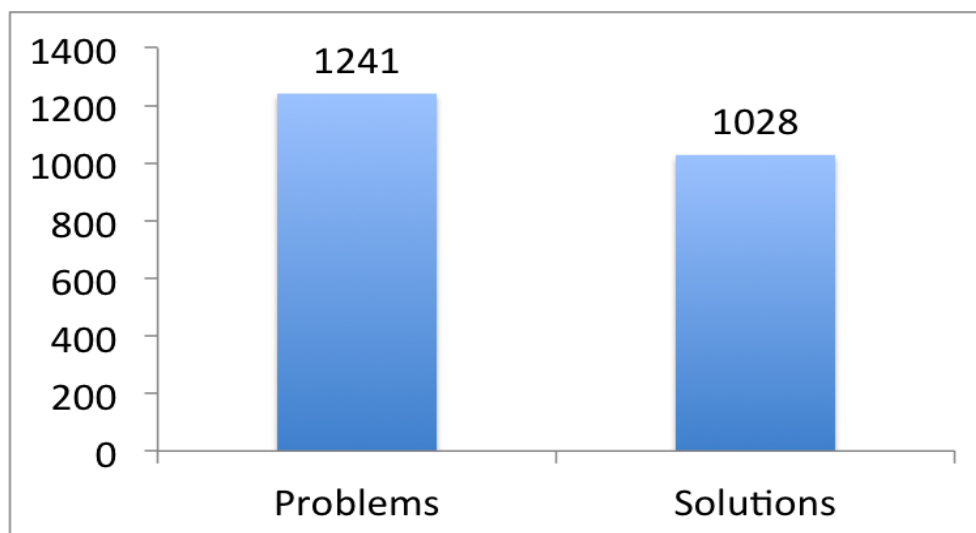


Figure 5.1: Articles about Solutions and Problems Frequency

Of the 1,241 articles describing problems in the Kenyan health sector, 286 (23 percent) were about staffing issues. This is partly because health professionals went on strikes numerous times in this period to protest nonpayment of salaries. The second most common type of problem was that of medicines, of which 106 (9 percent) articles were written about a lack of availability. A similar amount of articles (103 articles, 8 percent) were written about the need for more infrastructure (mostly meaning dialysis machines and x-ray machines, but also including need for improved hospital facilities and maternity wards).

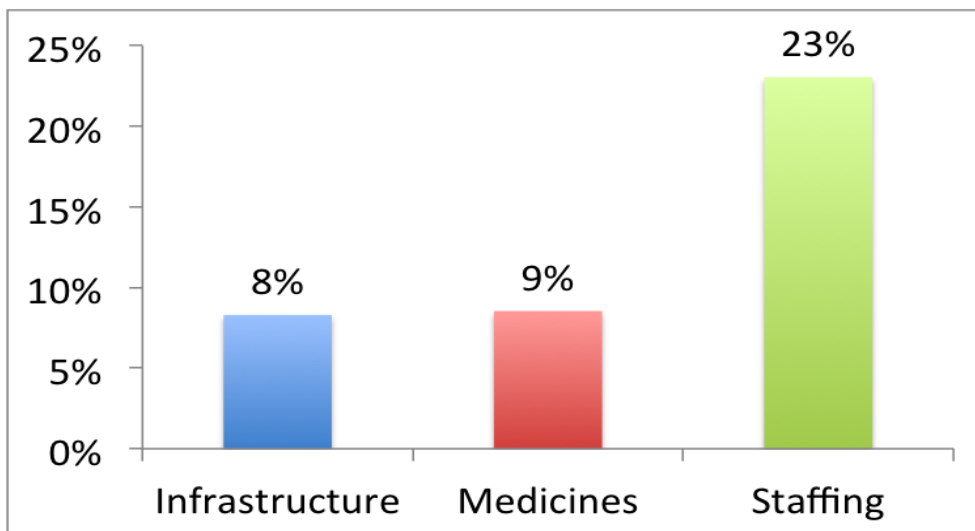


Figure 5.2: Articles about Problems by Type: Percentage

There were 1,028 articles about solutions being provided, 485 of them where delivery had actually begun (at least some action had taken place beyond a mere promise). Looking at all the articles about solutions, a disproportionate number were about new infrastructure projects. One-third (311) of the articles describing solutions were about new infrastructure projects, and nearly half of those (154) were about new infrastructure that would be visible to a passenger on the road (such as new buildings but not dialysis machines). Only 8 and 10 percent of the articles were about new medicines and staffing respectively. Compared to apparent need of different types of services (medicines and staffing) it appears that politicians disproportionately deliver infrastructure.

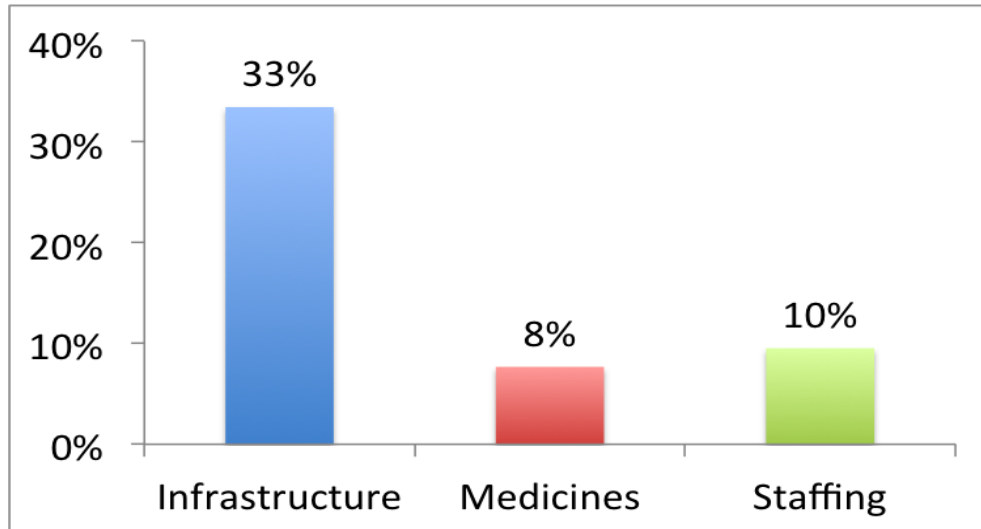


Figure 5.3: Articles about Solutions by Type: Percentage

I find a similar trend when I subset the analysis to only articles that describe completed or ongoing projects. I do this to suggest where politicians divert resources rather than where they pay lip-service. When I look at ongoing solutions, I see that 39 percent of articles described new infrastructure projects whereas only 7 and 9 percent of articles were about medicines and staffing respectively. Of the 189 articles describing infrastructure projects that were underway, 89 of them were coded as visible projects (that they could be seen by a passenger on the road).

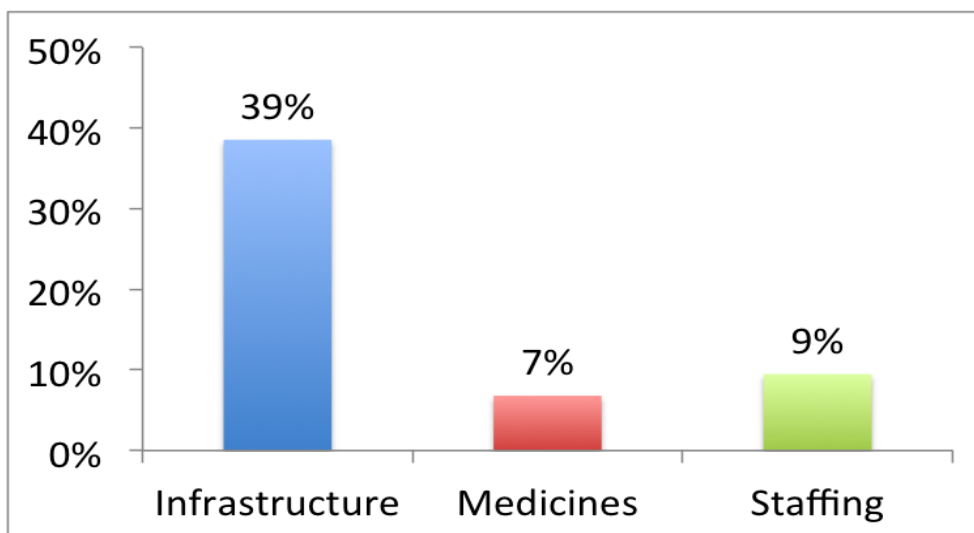


Figure 5.4: Articles about Actionable Solutions by Type: Percentage

The newspaper data suggests that politicians disproportionately provide visible projects versus non-visible projects compared to their level of need in Kenya. While new buildings are rarely called for in the media, they are the most often provided health service from the government. The most needed service for the health sector according to the media is payment of salaries for staff, and that appears to be provided relatively infrequently. I believe that is because infrastructure projects are more visible to the whole electorate and thus more valuable in future elections.

I further use the newspaper data to bolster the argument that politicians prefer visible projects for credit claiming to other types of projects. I coded whether a politician was specifically mentioned or shown in an accompanying photograph for each article. When the article was describing a solution, politicians were 6 percentage points⁵ more likely to be mentioned (69 percent vs 63 percent) and 5.6 percentage points⁶ more likely to be pictured (9.9 percent vs 4.3 percent) (see Table 5.1). When

⁵A politician being mentioned and the article being about a solution vs a problem are not independent at a $p=0.03$ level in a Pearson's Chi Square test.

⁶A politician being pictured and the article being about a solution vs a problem are not independent at a $p=0.000$ level in a Pearson's Chi Square test.

looking at only the articles describing solutions, politicians were 14 percent⁷ more likely to be mentioned in articles about visible projects than non-visible projects (80 percent vs. 66 percent). Furthermore, politicians were 7 percent⁸ more likely to be pictured in articles about visible projects than non-visible ones (14 percent vs. 7 percent) (see Table 5.2). Lastly, there is weak evidence that politicians are more likely to appear in articles about solutions where the project is underway or completed. Politicians were 3 percent more likely to be mentioned (71 percent vs 68 percent) and slightly more likely to be pictured (8.8 percent vs 7.4 percent) in articles that were about solutions where some action had taken place⁹ (see Table 5.3).

Table 5.1: Likelihood a Politician is Mentioned or Pictured: Problems vs Solutions

	Solutions (%)	Problems (%)	Difference
Mentioned	69	63	6**
Pictured	9.9	4.3	5.6***

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

Table 5.2: Likelihood a Politician is Mentioned or Pictured: Visible vs Non-Visible Solutions

	Visible (%)	Non-Visible (%)	Difference
Mentioned	80	66	14**
Pictured	14	7	7***

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

⁷I reject the hypothesis that a politician being mentioned and the article being about a visible project are independent with a p value = 0.002 in a Pearson's Chi Square test.

⁸I reject the hypothesis that a politician being pictured and the article being about a visible project are independent with a p value = 0.000 in a Pearson's Chi Square test.

⁹The correlation between politicians being mentioned and the article being about a solution that had begun is not statistically significant. The correlation between politicians being pictured and the article being about a solution where action had taken place is significant with a p value = 0.073.

Table 5.3: Likelihood a Politician is Mentioned or Pictured: Projects Underway vs No Action Taken

	Underway (%)	Not Underway (%)	Difference
Mentioned	71	68	3
Pictured	8.8	7.4	1.4*

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

A member of the local media supported my argument that politicians want to claim credit for positive health outcomes. I interviewed Maurice Alal, a longstanding member of the media in Kenya who reports on health. He informed me that politicians regularly contact members of the media to request that they publicize the politician's provision of health services. For instance, if a politician is part of a campaign distributing shoes to children, he will contact a member of the media to ensure that a picture of him distributing shoes is published, along with an explanation of the expected health benefits of wearing shoes. Mr. Alal says that this is especially true when the service is highly visible and involves some kind of ribbon cutting, such as at a new health facility. Not only do politicians wish to appear in articles about services that have been delivered, but they also hope to avoid appearing in articles that would implicate them in the lack of a service. Mr. Alal mentioned that it is sometimes dangerous to report politicians' names in articles about health problems, as politicians actively avoid being associated with problems in the health sector. George Bibao, a Ward Rep in Kisii County, confirmed the necessity for a politician to ensure that her good works get noticed:

Newspapers sometimes are good, some times are not good. You cannot lie to your people [and ask a reporter to write that you delivered a service that you did not actually deliver]. The most important thing here is to do both, once you have done on the ground, then you go to the newspaper, and you say 'this is what I have brought'. (George Bibao)

I ran all of the same Pearson Chi Square tests of independence while subsetting the data to each individual newspaper. I did this because of the possibility that double

counting the articles (as many of the government projects were reported in both The Standard and the Daily Nation). When running these robustness checks, I find that all of the significant correlations hold when looking only at the sample of articles from The Standard ($n = 1,251$). When subsetting the data to only articles from the Daily Nation ($n = 761$), the same trends continue but they are not significantly significant.¹⁰

I find that politicians are more likely to be associated with newspaper articles about solutions than articles about problems, and are more likely to be both mentioned and pictured when the solution articles are about visible projects. I infer that this is because politicians are intentionally associating themselves with visible projects and are more likely to provide visible services with the resources available to them. However, the newspaper data do not allow me to test the causal mechanism that drives politicians to provide more visible projects than non-visible services. These results also suffer from the threat of potential bias in the data (that the media reports certain types of events and not others). To uncover the causal mechanism, and to address the threat of bias in the newspaper data, I conducted fieldwork in Kenya to interview local politicians and directly ask them about their motivations in providing different types of health services.

5.5 Interview Data

In June and July 2015, I conducted semi-structured interviews in Kenya with 16 local politicians (12 Ward Representatives, 3 MCAs, and 1 MP).¹¹ The instrument

¹⁰There were also 85 articles from The Star, a lower tier newspaper in Kenya. I did not run a robustness check on this subsample because of the low number of observations.

¹¹In 2013, Kenya devolved into 47 counties, with each county having their own County Assembly. Each county is divided into wards, with a representative of each ward (Ward Representative) sitting in the assembly as elected Members of the County Assembly (MCAs). The 2010 Constitution mandated that every governing body in Kenya have one-third female representation. As a result, counties that failed to elect women to one-third of their County Assembly seats in the 2013 election

that I used to structure the interviews can be found in Appendix H.¹² In this chapter, I provide evidence from politicians that health is a salient electoral issue in Kenya. I then describe what kinds of health services politicians provide to win votes.

I interviewed politicians serving Kisii, Homa Bay, Kisumu, and Nairobi. In Kisii, I interviewed seven Ward Representatives. In Homa Bay, I interviewed four Ward Representatives. In Kisumu, I interviewed three unelected MCAs. In Nairobi, I interviewed one Member of Parliament and one Ward Representative.

In each interview, I made it clear that I was a Ph.D. student from the University of California, San Diego that was conducting research on government efforts to improve health. Interviews were semi-structured. I began each interview asking some general questions about what issues that politician's constituents cared most about, and what issues the politician felt were most important to deliver. I also asked the politicians which health services they delivered and why they selected those options instead of others.

Table 5.4 summarizes the key results from these interviews. I asked thirteen politicians what issues were most important to their constituents and every one of them mentioned health (though some gave multiple responses). I asked ten politicians what health services they had provided and found that providing white elephants was far more common than providing completed projects. White elephants are government projects (usually buildings) that are started but never completed. I asked sixteen of the politicians why providing white elephants was more popular than providing medicine, and fourteen of them included "visibility" in their response. Table 5.4 can be used as a reference for the remainder of this chapter.

were allowed to appoint women as MCAs to create that proportion. While these women have voting rights in the County Assembly, they do not represent specific wards.

¹²I received expressed IRB Exemption for these interviews from the UCSD Human Research Protections Program. A copy of their letter can be seen in Appendix L.

Table 5.4: Interview Data Summary

Initials	County	Health Matters?	# Completed Projects	# White Elephants	Visibility?
GB	Kisii	Yes	0	1	Yes
DO	Kisii	Yes	Not Asked	Not Asked	Yes
PM	Kisii	Yes	Not Asked	0	No
KM	Kisii	Yes	Not Asked	Not Asked	No
CM	Kisii	Not Asked	1	1	Yes
RO	Kisii	Not Asked	1	2	Yes
TM	Kisii	Not Asked	0	2	Yes
GJ	Homa Bay	Yes	0	1	Yes
SO	Homa Bay	Yes	0	1	Yes
GO	Homa Bay	Yes	1	0	Yes
PO	Homa Bay	Yes	0	1	Yes
SN	Kisumu	Yes	No WDF	No WDF	Yes
CO	Kisumu	Yes	No WDF	No WDF	Yes
LO	Kisumu	Yes	No WDF	No WDF	Yes
GT	Nairobi	Yes	> 0	> 0	Yes
GM	Nairobi	Yes	> 0	> 0	Yes

5.6 Do Politicians Campaign on Health?

Chapter 4 shows that voters consider a politician’s dedication to health in their voting calculus. However, the survey experiment suffers from a variety of threats and on its own does not sufficiently demonstrate that health is a vital issue in Kenyan elections. To confirm these results, I directly asked politicians what issues were most important for them to provide, and if pledging to promise health could bolster electoral prospects. Every politician agreed that health was one of the most essential services to deliver. I asked thirteen Ward Representatives what the most important services for them to provide were, and all thirteen included health in their response. Seven of the thirteen gave three responses: health, education, and infrastructure¹³. As the chair of the health services committee in the County

¹³The politicians clarified (without prompting) that “infrastructure” means “roads”.

Assembly, Hon. Oswo is particularly concerned about the health indicators in Homa Bay County. In particular, he highlighted the 25.7 percent HIV infection rate in his county, stating that it was the “worst globally.” Hon. Godfrey Juma, representative from Kabondo West and chair of the county’s finance committee, agreed that improving health outcomes in Homa Bay was a priority:

Getting health care services such as ambulances.... Six women have lost lives in pregnancy in this ward in the past two years. Health centers and dispensaries are too far away for people to access. There are only two dispensaries for 35,300 people. (Godfrey Juma)

The politicians unanimously agreed that health was something that was essential for them to deliver to their people. However, does that necessarily make it a viable issue in elections? In responding to a direct question about the value of pledging to improve health for a campaign, the politicians conveyed that it is a necessary strategy for winning reelection. Hon. Bibao best sums up the opinion of the majority of politicians:

You have to, or you are not even in the election. Education, infrastructure (roads), and health are the big three. (George Bibao)

In Hon. Bibao’s opinion, failing to campaign on health eliminates a candidate’s possibility of winning the election. The sentiment that most politicians conveyed is that it is necessary to *at least make promises* to improve health. Most politicians agreed that *actually improving* health indicators would likely not influence election results. Rather, they stress that it is far more valuable to *appear* that one is improving the status of the county; according to them, this can be done by building visible development projects or through direct handouts to the voters.

The politicians were keenly aware of the necessity to signal their dedication to health in order to win reelection. I asked them what kinds of services they provided in order to send this signal. They repeatedly told me that they had built new facilities

for their people. This information confirmed the results from my newspaper study that politicians prefer delivering medical infrastructure rather than medicines. I was surprised, however to learn how few of the politicians had completed construction on the facilities that they were providing. When one drives through Kenya, they can readily see half constructed brick buildings: these are almost always white elephants.

How common are white elephants in Kenya? Data from my small sample of politicians suggest that white elephants are far from rare. I asked four Kisii Ward Representatives what they did with their WDF for health. In total, the four Kisii Ward Representatives had spent 7 million shillings (\$70,000) on a total of four white elephants and 2 million shillings (\$20,000) improving two existing facilities. Individually, Ronald Onduso spent 1 million shillings completing a maternity ward that was started by the constituency's Member of Parliament. It had already been functioning and is still functioning. He also spent 2 million shillings building two brand new dispensaries; neither is finished or functional. Timothy Myarango spent his 3 million shillings on two new dispensaries, neither is complete or functional. Charles Maina invested 2 million shillings on a new health center, which is not close to being finished nor functional. Hon. Maina also spent 1 million shillings providing electricity and a gate for an existing dispensary. Hon. Maina's dispensary was functioning before electricity and is still functional today.

I also asked four Ward Representatives in Homa Bay what they did with their 1 million shilling Ward Development Funds for health. In total, they spent 3 million shillings (\$30,000) on three white elephants and 1 million shillings (\$10,000) renovating an existing maternity ward. Hon. Godfrey Juma invested 1 million shillings on a new dispensary that is neither completed nor functional. Hon. Sia Oyoo started construction on a maternity wing, which is neither completed nor functional. Hon. Godfrey Osoo began construction on a health center that is

neither finished nor functional. Hon. Patrick Odwalo invested 1 million shillings to renovate a maternity wing. The maternity wing was functioning before renovations and is still providing services today.

Combining the projects being provided by Ward Development Funds of the eight politicians in Kisii and Homa Bay that were interviewed, 10 million Kenyan shillings were spent on seven white elephants. This represents about \$100,000 that failed to produce any of their intended services (in this case, public health). A summary of the WDF for health projects from interviewed politicians can be seen in Table 5.5.

Table 5.5: WDF Projects Summary

Initials	White Elephant	Cost	Completed Addition	Cost
GB	New Disp.	\$30,000		
GJ	New Disp	\$10,000		
SO	New Maternity	\$10,000		
GO	New Health Cent.	\$10,000		
RO	2 New Disp.	\$20,000	Maternity	\$10,000
CM	New Health Cent.	\$20,000	Electricity for Disp.	\$10,000
PO			Maternity	\$10,000
		\$100,000		\$30,000

In Nairobi, I asked MP George Theuri what he has done with his Constituency Development Funds (which for that year was 85 million shillings):

In terms of health, I have four public health centers. Every health center we have [constructed] a doctor's quarter. We want to have a resident doctor in every facility. It is upon the health center if they want the doctor to come and reside there. If they want to use that room for different purposes, as long as it is for health, it's up to them. (George Theuri)

I learned from Ward Representative Hon. George Maina (who serves a subset of the same constituency as Hon. Theuri), that none of the four dispensaries wish to have a resident doctor, and the doctor's quarters remain unused. Image 5.1 is

a picture of myself and Hon. Maina outside one such doctor's quarters (note Hon. Theuri and Hon. Maina's names painted on the exterior wall).



Image 5.1: Doctor's Quarters (Embakasi, July 2015)

It was extremely evident that politicians preferred to deliver infrastructure to other forms of health services. However, it is obvious that many of these projects are not close to completion. Why are these politicians not fearful of being punished for providing white elephants? Are constituents not angry when their elected representatives spend funds on projects that do not provide any actual services? When directly asked these questions, politicians explained their capacity to avoid blame for lack of project completion:

People will partially vote for you because they can see the construction, and see that you brought them some development.... [As far as lack of completion], you tell them that it's not your fault, that you brought what you could but then you were victimized by other areas of government or the contractor. (Timothy Myarango)

Hon. Myarango explained that a politician has plenty of plausible deniability when it comes to why construction stalled. Therefore, a politician can claim credit for fighting for his people so long as enough construction exists to be a visible sign of his efforts.

Member of Parliament, Hon George Theuri from Nairobi explicitly talked about white elephants being better politically than other of the more efficient services that a politician could provide:

It's politics. It's politics. Everybody, in Kenya, politicians, our rating to the public, it's all about development. For me, I'm a policymaker. But people do not judge me because of my bills, my policies that I've put into place. They judge me according to what I have done on the ground that is directly reflecting to their lives. Because of that, it is better for somebody to start a project which will not complete, because when they go back to the public they can say 'you see, I've started'. Then they will judge him because of what he has started, not what he has done. They will rate him *'he is doing something'*. You say we need to pay health workers better, we need to look at the welfare, that won't count. So we prefer making many white elephants, so that people will see. [For the welfare of our people, it's better to pay our workers and make sure that facilities are stocked] but for us, we prefer to make big hospitals with just one doctor. (George Theuri)

Both Hon. Myarango and Hon. Theuri's points provide evidence for Keefer and Khemani (2005)'s assertion that "politicians prefer to expend resources on constructing and staffing schools and clinics, even if they remain empty and unused, for example, than on improving the quality of services. Politicians get some credit for easy-to-observe buildings and jobs but little or no credit (or blame) for the quality of services available." As I wrote above, a constituent who sees a half built dispensary is likely to say that his politician delivered on half of his promise, which might be more than the alternative politician would have delivered. It is worth noting that white elephants are not entirely without merit. The construction effort creates jobs and likely purchases supplies from nearby quarries. While white elephants may not deliver any health services whatsoever, their construction creates some development for an area. In fact, not completing the construction of a white elephant may actually *help* a politician in their next election. Locals living near white elephants might be more inclined to vote for the reelection of their incumbent

if they expect to be hired for the rest of the construction project.

The politicians made it clear that appearing to improve health in their wards was essential for reelection; but how do they achieve that and why? Why did Hon. Bibao spend 3 million shillings to construct a white elephant when he could have spent only a fraction of it fully stocking the existing dispensary in his constituency? In Hon. Bibao's own words, it is because "people are interested in what they see":

People are interested with what they see. If you can bring up a structure, people will vote for you. They don't see the medicine, unless they are sick. They can say 'our MCA has brought development'.... We built it, we equip it, we hire a nurse, then they start to receive services. They used to walk 10k to the dispensary, now the services are more near to those people, they will appreciate. At meetings, they will say 'we have been helped, because during the old days, there wasn't such a facility, now you have brought it.' They can see with their own eyes. (George Bibao)

The factor of "visibility", of "seeing the service with their own eyes" was repeated by a number of politicians. In fact, many of them emphasized the point with a hand gesture pointing to their eyes. Each politician who brought up visibility did so on his own accord; they were not prompted to discuss visibility. I argue that this emphasizes that politicians recognize the importance of their projects' visibility.

Why would guaranteeing access to medication not be rewarded in a similar fashion? Hon. Philip Motonu explained that using funds to eliminate stockouts would not win an incumbent the election:

If you spent all the money on 'no stockouts' that cannot help with reelection. It means that you should not have given services to the people. If you don't give services to your people, they will not reelect you. There are those that don't understand, whether there is money, or no money. (Philip Motonu)

In Hon. Motonu's opinion, supplying existing dispensaries with medicine would not even be considered a service to the people. Visible development is the only thing that counts in an election according to him, because voters only take into

account what they see. When pressed further, he said that delivering medicines would matter only after constituents have called to complain about it, which does happen; though it only matters for those constituents who were previously aggrieved about the stockout. However, to those individuals, supplying the medicines would matter as much as the new structure.

Constituents regularly call us when there is a stockout. That is politically valuable, that helps with reelection. That is as valuable to reelection as new structures. (Kathryn Manzi)

I asked Hon. Kathryn Manzi (the only elected woman in her county besides the Women's Representative) what services were most likely to convince her constituents to vote for her in the next election. To avoid priming, I asked this before we had specifically discussed the health sector. She said that building maternity wings, staff quarters, and mortuaries would be the most influential services for winning votes.

Hon. George Maina in Nairobi also emphasized that voters want services that they can see, and acknowledged that funding existing facilities is likely better for the people.

You see, this is Africa, we have a problem. People want to 'see something'. They want to 'see'. It may not even be a lot of money, but once they see that, they will say that you are doing a lot of development, but in a real sense, you are wasting a lot of money on those things. In fact, if I was to be asked, funding and equipping the hospitals in terms of drugs and equipment, is a lot better, because it is affecting the people direct. Opposed to building a new building that will not be through by the end of your term. People need to rethink some of these decisions. (George Maina)

To be clear, I visited the local dispensary with Hon. Maina, and it was fully stocked as far as I could tell (which also had ORS and zinc in stock, zinc being very uncommon in Kenya). Hon. Maina explained that at one point that dispensary had suffered stockouts of medications, and he personally went to the Kenyan Medical

Supplies Agency and argued until they guaranteed an expedient delivery. Of all the politicians I met, Hon. Maina seemed to be the one that was most concerned with providing basic services (supplying existing facilities) and uninterested in building new structures.

I specifically asked two politicians in Homa Bay to tell me which service they would rather promise in the next campaign: medicines or new structures. Godfrey Juma and Godfrey Osoo explained that structures would matter more in terms of electability because of their visibility to voters:

Physical Infrastructure. What they see. We didn't have this here. Now we have this here. (Godfrey Juma)

From a mere perspective of [the voters], they will consider what they see. But an expert [will look at it and see] many structures but no services... Why would [politicians] build new infrastructures [despite this]? Because the people who are thinking about reelection want to see what has been done. (Godfrey Osoo)

The politicians interviewed reiterated several times that new infrastructure (particularly buildings) were the most valuable services to deliver for their reelection hopes. The following is one depiction of this phenomenon from my interview with Hon. George Bibao, the chair of the health committee in Kisii County. Hon. Bibao repeatedly highlighted that “new infrastructure” was the most important sign of “improving health services”. He was extremely proud of the new dispensary that he had built for his ward and invited me to see it. After some insistence on his part, I agreed to visit his dispensary so long as he dropped his request that we be accompanied by members of the local media. Upon arriving at the site, I was surprised to learn that construction for the dispensary he was referring to was nowhere near completed. Image 5.2 shows Hon. Bibao's white elephant. Hon. Bibao exclaimed that he “was only given 3 million shillings. What can you do with 3 million shillings?”

To further my surprise, the site of this construction was mere inches from a second white elephant health dispensary and 50 meters from a third white elephant dispensary. Construction on the second white elephant had started in 2013 and stalled in 2014. Funding for this other dispensary was provided by the current Member of Parliament's Constituency Development Funds. When asked why he did not simply add his 3 million shillings to the construction of this previous project, Hon. Bibao explained that it would not be "his project" to give to his people. In fact, "FUND: CDF" and the dates of construction are painted on the first building. In visiting multiple health facilities, I would come to learn that painting the name of the politician who funded the project on the exterior wall of the building is common practice.



Image 5.2: Two White Elephants (Bokimonge, June 2015)



Image 5.3: CDF Labeled Dispensary (Bokimonge, June 2015)

Hon. Bibao made it clear that he wanted a dispensary that *he* had provided for his people. His primary reason for spending his Ward Development Funds on new construction was so his people would not have to walk so far to receive health services. This was a common reason provided by the politicians who were interviewed, and they echoed the Ministry of Health’s objective to place a health facility within 5km of every Kenyan household. This made Hon. Bibao’s prized project particularly surprising because we visited a functioning dispensary less than 200 meters from this location, and a functioning level 4 hospital less than 2 kilometers away. While at the existing dispensary, the health worker noted that his dispensary had not contained medications (of any kind) for over four months, and he did not expect a shipment to arrive any time soon. While at the existing Level 4 hospital, a doctor told me that they had nearly none of the required essential medicines, including ORS and anti-malarial drugs. At each of these statements, Hon. Bibao rushed to explain that this is why “western donors need to increase their funds to Kenya”, shirking any unspoken accusation that he should have spent his health budget supplying existing facilities rather than building half of a new one.

The results from Chapter 3 strongly suggest that the scenario in Hon. Bibao’s

ward is not unique. Stockouts of essential medicines prevail in this region of Kenya, and 40 percent of surveyed dispensaries lacked any ORS. The newspaper data reported above show that new infrastructure is much more frequently provided than medicines in Kenya.

5.7 Conclusion and Further Research

In conclusion, I find that Kenyan politicians are incentivized to provide health services that do less to save lives than alternative options. A key point is that voters prefer to vote for visible services than for services that they cannot easily see. Particularly troubling is the fact that Kenyan politicians believe (and are likely correct) that they are heavily rewarded simply for *starting* projects, and not punished for failing to complete them: which means that their incentive is to not fully invest resources into the completion of the project. When one adds the fact that county health budgets are being splintered into relatively small (albeit it equal) pieces of between 1 and 3 million shillings per ward, it is no surprise that so many dispensaries are not completed.

The conclusions of this chapter motivate questions for further research. I have shown that politicians believe that visible projects are more electorally viable than non-visible projects. In 2017, I will be able to test this hypothesis by comparing the reelection success of Ward Representatives that delivered more visible health services to Ward Representatives that delivered less visible services.

5.8 Acknowledgements

Chapter 5, in full, is coauthored with Alexandra Voight. The dissertation author is the principal researcher and author. Combes, Nathan J. and Alexandra

Voight. "Visible Health Services Win Votes".

Chapter 6

Conclusion

This dissertation has shown that the government of Kenya is under-providing oral rehydration solution (ORS), a low-cost intervention that could save 5,400 Kenyan children annually. ORS is sorely needed and in demand by Kenyan families. Furthermore, voters in Kenya partially determine whom they will vote for based on pledges to decrease child mortality; thus, we should expect politicians to deliver ORS. I find that politicians do not deliver ORS because of incentives to deliver highly visible projects such as new medical facilities; even if those projects are never completed. Highly visible medical facilities send a signal of the politician's dedication to health more consistently and to more voters than do medicines such as ORS.

The severity of childhood mortality from diarrhea in Kenya is undeniable. At minimum, 100,000 Kenyan children under the age of five die from a communicable disease every year. The second leading cause of child mortality in Kenya is diarrhea, which claims the lives of more than 5,400 under-fives annually. Diarrhea imposes a particularly large burden in the western regions of Kenya, where 17 percent of respondents report having had a child die before the age of five. Childhood mortality from diarrhea persists despite the existence of oral rehydration solution (ORS), a

treatment that is effective in preventing death over 93 percent of the time (Munos et al., 2010).

In Chapter 2, I showed that Kenyans use ORS when it is made available to them. The demand for ORS shows that it is an efficient service for politicians to supply. Prior to my research, the conventional belief in public health literature and aid organizations on the ground was that Kenyan parents chose *not* to administer ORS to their diarrhea-affected children. Another commonly held belief was that Kenyan children die from diarrhea because their parents neglect to take reasonable measures to prevent onset of the disease. I argue that this dissertation largely debunks these myths, showing that Kenyans know their responsibilities in treating their children's diarrhea.

Approximately one-third of respondents who attempted to receive ORS have personally experienced a stockout (as shown in Chapter 4). Lack of availability is thus the major mechanism explaining the low usage of ORS in Kenya. Chapter 3 described an independent audit finding that approximately 40 percent of Kenya's Ministry of Health run dispensaries are out of stock of ORS. Evidence from this audit suggest that stockouts of ORS are an ongoing problem. 38 percent of dispensaries reported that they have been out of stock of ORS for at least half of the previous 12 months, suggesting that this is a pervasive problem. 55 percent of surveyed dispensary workers believe that the primary challenge to preventing diarrheal mortality in Kenya is the lack of supply of ORS. When asked about the poor supply of ORS, 76 percent of respondents explain that these occur because of some failure in the supply chain, 89 percent of which suggest that the break in the supply chain happens *after* KEMSA had procured the stocks. Thus, the prevailing belief is that ORS is in stock at KEMSA, but is not finding its way to local dispensaries.

The stockout problem is not limited to ORS. 61.2 percent of dispensaries

report having less than half of the list of essential medicines in stock. 19.4 percent of dispensaries claim to have about half of the list in stock. The summation tells us that less than 20 percent of dispensaries have the majority of essential medicines in stock. Less than 6 percent report having every medicine on the list in stock. Dispensaries request more medications from their county governments but do not receive what they have ordered.

Part two of this dissertation explained the political dynamics of health delivery. Is health part of the voting calculus in Kenya? Africans have been painted as individuals who vote primarily for their ethnic ally (Barrows, 1976; Easterly and Levine, 1997) or in exchange for a cash handout (Jensen and Justesen, 2014; Vicente and Wantchekon, 2009), not as people who fundamentally understand the issues at hand. Chapter 4 contributed to the argument that Kenyans are issue-based voters, and that health is one of the major issues that they consider. I showed that voters attribute the responsibility of improving child health to politicians, with over 97 percent of respondents saying that the government should be responsible for guaranteeing the health of Kenyan children. Via a survey experiment, I showed that a Kenyan politicians' voteshare is likely to increase by 17 percentage points when she adds a pledge to decrease child mortality to her campaign.

If politicians want to win reelection in Kenya, they need to signal that they are more dedicated to providing for health than their opponents. How can they successfully send this signal and differentiate themselves from opposition candidates who also promise to deliver health services? The fifth chapter of this dissertation discussed a common strategy that Kenyan politicians utilize in sending this signal: they build health facilities and paint their name on the exterior. Unfortunately, this strategy inadvertently diverts resources away from the most needed services in Kenya's public health sector: essential medicines.

Politicians rationally deliver white elephants because they signal a dedication to voters' health. I define a signal as the information that is perceived by voters (which might differ from actual health outcome). Thus, when deciding which health policies to deliver, politicians choose the services that send the loudest and clearest signal. I conceptualize the "loudness" of a signal by the number of people that it reaches. I define the "clarity" of a signal by how easily constituents attribute it to a particular politician. In the context of the Kenyan health system, building new infrastructure is a clear, loud signal of a representative's devotion to health. Procuring medicines such as ORS, on the other hand, is a significantly weaker, noisier signal as the action is only visible to the constituents who acquire the drugs. The result in Kenya is that politicians allocate a disproportionate amount of funding to new infrastructure, and badly underfund medicines and staff.

Working with an undergraduate research assistant turned coauthor (Alexandra Voight), I developed the argument of Chapter 5 in two steps. I showed that politicians deliver new infrastructure projects despite evidence that the procurement of medicine and staff are the greatest areas of need. I made this point using an independent dataset of every health article from Kenya's two leading papers from August 2014 to April 2016. In the second step, I used interview data to suggest that reelection concerns could be the causal mechanism leading to the over-allocation of funds to visible projects.

In conclusion, I find that Kenyan politicians are incentivized to provide health services that do less to save lives than alternative options. A key point is that voters prefer to vote for visible services than for services that they cannot easily see. Particularly troubling is the fact that Kenyan politicians believe (and are likely correct) that they are heavily rewarded simply for *starting* projects, and not punished for failing to complete them: which means that their incentive is to not

fully invest resources in the completion of projects. When one adds the fact that county health budgets are being splintered into relatively small (albeit it equal) pieces of between 1 and 3 million shillings per ward, it is no surprise that so many dispensaries are not completed.

6.1 Implications

The conclusions of this dissertation raise questions about the expected outcomes of devolving discretionary power of services delivery to local politicians. In Kenya, the intention of devolution was to allocate power to different regions of the country. While it accomplished that, it happened to give the power of delivering health services to local politicians rather than to local technocrats. As a result, individuals whose job stability is dependent on popular opinion rather than measured outcomes are spending the health budget. I argue that the results of doing so are disastrous, and costing the lives of thousands of children.

The results of this dissertation generalize beyond Kenya and beyond the health sector. Diarrhea claims the lives of 1.5 million people per year; almost entirely in developing countries. Is the cause of low ORS uptake being speculated upon rather than systematically studied in these countries as well? Do these countries have an equally low availability of ORS? Does the incentive to provide visible services explain that lack of ORS provision? I postulate that the incentive to provide visible services can partially explain poor performance in a number of other sectors. In developing countries it is not uncommon to see schools without teachers, schools without books, or water wells and public toilets that are built but never maintained. Is it the case that politicians are exerting effort to deliver the visible portions of these services and then not completing the remainder?

6.2 Future Research

The conclusions of this dissertation motivate further research. I believe that this dissertation has successfully created a robust research agenda for my future. Prior to this dissertation, I could not definitively defend that this was a topic of political science research (that these services are in demand, that politicians have the responsibility to deliver these services, that constituents link the accountability for these issues to their politicians, and that voters will change their vote in part depending on health outcomes). Now that this dissertation has answered each of these broader, first-order questions, I am in a position to study the narrower causal mechanisms linking health outcomes to politics.

The results of Chapter 4 tell us that Kenyan voters increase their support for candidates who pledge to decrease child mortality more broadly. Politicians directly informed me that delivering visible infrastructure is better at sending that broad signal than delivering medications that have a high-impact on survival. I plan to use the 2017 elections to test some more specific hypotheses.

First, what services are most successful in helping politicians win reelection? Are the politicians who provide white elephants more likely to win reelection than the incumbents who provided ORS to existing dispensaries? Secondly, are candidates who pledge to improve health in their campaigns more likely to win than candidates who do not? More specifically, what is the impact of pledging to decrease child mortality? My survey experiment suggests that this strategy increases a candidate's voteshare by 17 percentage points. How accurate is this prediction for real elections? Lastly, what are the electoral outcomes for candidates who successfully improve health in their constituencies? Are candidates who successfully prevent the deaths of their constituents more likely to be reelected?

I also want to investigate where white elephants are being constructed. The

placement of dispensaries is likely a political decision. The location allows closer access to some constituents as well as jobs to work on the construction. Where are these white elephants provided? Is that political? I currently have GPS coordinates for MOH dispensaries but I do not have data on the years that they were constructed (nor do I know if that list includes white elephants). Many of the dispensaries have been in place since the colonial era (constructed by the British or by various religious groups), so a simple analysis on that data would have too much noise at this stage. If I were able to identify what years each dispensary was constructed, I could analyze the subset of dispensaries that had been provided by Kenyan elected officials. I could also use the colonial dispensaries (making the assumption that they are apolitically located) to get leverage on an identification strategy.

6.3 Concluding Remarks

This dissertation is the beginning of a much larger research agenda for myself as a scholar and for this topic in particular. Prior to my dissertation research, the scholarly community had little knowledge about the politics of childhood mortality from diarrhea. In fact, the public health community and practitioners on the ground appeared to be relying on fundamentally outdated findings regarding Kenyans' unwillingness to use ORS and preference for witchcraft. My dissertation offers a countervailing and more accurate picture of Kenyans' attitudes and beliefs. My dissertation also produced an audit of the Kenyan dispensary system (in western Kenya) where none existed before. I also have answered the question of whether or not health is a salient electoral issue in Kenya; concluding that it definitely is. I provide suggestive evidence that politicians rationally deliver projects that are more visible even though more impactful options exist (delivering white elephants rather than medicines).

These findings create a sufficient body of evidence to warrant deeper exploration. Are politicians correct that visible projects are rewarded when impactful projects are not? Can receiving something as inexpensive as ORS change the way that a voter votes? Are there ways to incentivize politicians to deliver the low-cost, high-impact projects at their disposal and thus save thousands or millions of lives?

Appendix A

Supplementary Information for Public Health Articles

Table A.1: Rate of Use of Diarrheal Treatments

First Author	Year	ORS	Herbal	Antibiotic	Antidiarrheal
Goel	1996	23	n.a.	n.a.	n.a.
Othero	2008	45	7.7	n.a.	45.3
Blum	2011	n.a.	Strong Preference	n.a.	n.a.
Olson	2011	43	preference	n.a.	81
Omore	2013	22.9	n.a.	n.a.	Strong Preference
Zwisler	2013	<40	n.a.	50	n.a.
Combes	2016	83	1.29	n.a.	76.6

Table A.1 shows the results of my survey compared to the other studies about diarrheal attitudes and behaviors in Kenya. My results show a considerably higher level of ORS uptake (83 percent). Only three other articles asked respondents for their preference in administering herbal remedies to children with diarrhea; Othero et al. (2008) (whose sampling strategy was the most similar to mine by surveying respondents throughout Nyanza) showed low uptake of herbal remedies (as did mine), whereas Olson et al. (2011) and Blum et al. (2011) report that “Kenyans” have a

preference for herbal remedies, despite only sampling in the small region of Assembo. Respondents to my survey report similarly high levels of antidiarrheal usage to the other studies.

Appendix B

Supplementary Results from 2014 Survey of Kenyan Constituents

Table B.1: Perceived Causes of Diarrhea: Total Mentions

		Freq.	Percentage
1	Poor Hygiene	786	78.1
2	Contaminated Food	467	46.4
3	Unclean Water	422	42.0
4	Diseases	84	8.4
5	Teething	75	7.5
6	Poor Healthcare	59	5.9
7	Eating Non-Consumables	43	4.3
8	Poor Feeding Habits	29	2.9
9	Allergies	14	1.4
10	Eating Too Much Oil	7	0.7
t11	Taboos	3	0.3
t11	Change in Climate	3	0.3
13	Breastfeeding While Mother Ill	1	0.1
		n = 1,006	

Table B.1 presents the full range of responses to the question of what causes diarrhea in children. Respondents were allowed to list up to three causes; this table

presents the percentage of respondents who listed each cause as any of their three responses. The vast majority of respondents gave correct answers of poor hygiene, contaminated food, or unclean water. Very few respondents (only three) believe that diarrhea was caused by a taboo of some sort (in these cases, it was the believe that a neighbor gave you the evil eye). I am told that “teething” here refers to as being at the stage of life (meaning a toddler) where diarrhea is common.

Table B.2: Most Serious Problems in Locality: Total Mentions

		Freq.	Percentage
1	Lack of Clean Water	331	32.9
2	Poverty	167	16.6
3	Insecurity	166	16.5
4	Diseases/Epidemics	162	16.1
5	High cost of living	138	13.7
6	Poor Sanitation	113	11.2
7	Unemployment	112	11.1
8	Insufficient Health Services	101	10.0
9	Poor Infrastructure	64	6.4
10	Food Shortage	53	5.3
11	Education	36	3.6
12	Climate Change	22	2.2
13	Corruption	14	1.4
14	Poor Governance	12	1.2
15	Tribalism	9	0.9
16	Overpopulation	8	0.8
17	Alcoholism	6	0.6
t18	Child Neglect	4	0.4
t18	Immorality	4	0.4
20	Poor Housing	3	0.3
t21	Domestic Violence	2	0.2
t21	Witchcraft	2	0.2
t21	High Deathrate	2	0.2
t24	Non-exploitation of Resources	1	0.1
t24	Single Parenting	1	0.1
		n = 1,006	

Table B.2 shows respondents’ first mentions to an open-ended question about

the most serious problems in their locality. Issues that are directly related to health (clean water, diseases, sanitation, health services, and deathrate) represent 61.4 percent of responses.

Table B.3: Perceived Best Treatment of Diarrhea

		Freq.	Percentage
1	Hydration, such as ORS	647	64.3
2	Anti Diarrheal Drug	207	20.6
3	Antibiotics	84	8.4
4	Increase Food and Liquids	24	2.4
	All other responses	44	4.4
		n = 1,006	

Table B.3 presents the results of a question that asks what is the best treatment for diarrhea in a child under the age of five. The “other responses” not listed here include herbal medication (13 mentions), no or little food or liquids (3 mentions), homemade ORT (3 mentions), hygiene (2 mentions), No treatment (1 mention), zinc (1 mention), antibiotics (1 mention), antimalaria drugs (1 mention) and non-response (N/A and Don’t Know - 5 and 14 mentions).

Appendix C

Afrobarometer Full Results

Table C.1 gives the full range of responses to a question about the “most important issues that the government should address” in round 6 of the Afrobarometer. When adding all the things that directly relate to health (health, water, disease, AIDS) 52.2 percent of respondents want the government to address health.

Table C.1: Afrobarometer: Most Important Problems that Government Should Address, Total Mentions

Response	Freq.	Percentage
Crime and security	961	40.1
Unemployment	743	31
Education	594	24.8
Infrastructure / roads	554	23.1
Health	534	22.3
Food shortage/famine	481	20.1
Management of the economy	476	19.8
Water supply	469	19.6
Poverty/destitution	362	15.1
Corruption	347	14.5
Electricity	181	7.5
Farming/agriculture	165	6.9
Wages, incomes and salaries	133	5.5
Agricultural marketing	109	4.6
Rates and taxes	102	4.2
Drought	76	3.2
Political instability/ ethnic tensions	72	3
Transportation	64	2.7
Discrimination/ inequality	62	2.6
Other	58	2.4
Land	48	2
Loans / credit	42	1.7
Orphans/street children/homeless children	41	1.7
Housing	31	1.3
Democracy/political rights	26	1.1
Political violence	25	1
Sickness / disease	22	0.9
Communications	19	0.8
AIDS	13	0.6
Services (other)	12	0.5
Gender issues / women's rights	13	0.5
Don't know	9	0.4
War (international)	8	0.3
Civil war	8	0.3
Nothing/ no problems	4	0.2
Missing	6	0.2
	N = 6870	

Appendix D

Supplementary Results from 2015 Survey of Kenyan Dispensaries

Table D.1: Dispensary Respondents' Job Titles

		Freq.	Percentage
1	Nurse	335	83.3
2	Clinical Officer	45	11.2
t3	Clerk	4	1.0
t3	In charge	4	1.0
t3	Lab Technician	4	1.0
6	Pharmacist	3	0.8
t7	N/A	2	0.5
t7	Nutritionist	2	0.5
t9	Counselor	1	0.3
t9	Midwife	1	0.3
t9	Record Keeper	1	0.3
		n = 402	

Table D.1 Gives the frequency of job titles for the respondents to my survey at dispensaries. At each dispensary, our enumerator surveyed the highest-ranking person present. Nearly 95 percent of our respondents are either nurses or clinical offers. These percentages match my expectations of what kind of workers are in

charge of dispensaries in Kenya (mostly nurses, occasionally clinical officers, never doctors).

Appendix E

Supplementary Information on Health Newsfile Dataset

Table E.1: Problems by Issue, Total Mentions

Issue	N	Percentage
Staffing	286	23
Other	204	16
Sanitation	181	15
Medicines	106	9
Medical Infrastructure	103	8
Funding	93	7
Prevention	79	6
Water	76	6
Vaccination	49	4
HIV/AIDS	33	3
Transportation	24	2
Mosquito Nets	7	1
	N = 1,241	100

Table E.1 lists the primary issues in the 1,241 articles that detailed problems. These articles (along with those in Table E.2 are not fully independent, as these tables represent the issues that were either the primary or secondary focus of the article. The

number of observations in these two tables combined is 2,269 whereas the number of independent articles is 2,097. Thus, for the most part, they are independent articles.

The frequencies in Table E.1 are the number of times each issue was presented as a problem in Kenya as either the first or second focus of the article. Staffing and sanitation were the modal problems described in Kenyan newspaper articles.

The frequencies in Table E.2 are the number of times a solution to each issue was presented in a Kenyan newspaper article (as either the first or second focus of the article). Articles describing new infrastructure represent a full third of the health articles about solutions in Kenya's two leading newspapers.

Table E.2: Solutions by Issue, Total Mentions

Issue	N	Percentage
Medical Infrastructure	344	33
Other	112	11
Funding	104	10
Staffing	98	10
Medicines	79	8
Prevention	71	7
Water	60	6
Sanitation	55	5
Vaccination	38	4
Mosquito Nets	25	2
HIV/AIDS	24	2
Transportation	18	2
	N = 1,028	100.0

Appendix F

Logistic Regression Results with Robust Standard Errors

Tables F.1, F.2, and F.3 are robustness checks to the logistic regressions shown at the end of Chapter 2. They each show that having received training on the treatment of diarrhea from the government in Kenya is a significant predictor of using ORS, knowing that ORS is the best treatment for diarrhea, and not using antidiarrheals, even when clustering standard errors. The only independent variable that is significant in all three logistic regressions is having received training on the treatment of diarrhea from a local health organization. Having attended a training session from a local health organization is a significant indicator of people who are more knowledgeable that ORS is the gold standard of treatment and more likely to administer ORS. However, people who receive training from local health organizations are also more likely to administer antidiarrheals, a dangerous treatment for children. Men are significantly less likely to administer ORS than women, but as likely to know that it is the gold standard of treatment or to administer antidiarrheals. All results are consistent with Tables 2.7, 2.8, and 2.9 in Chapter 2.

Table F.1: Use ORS, Logit, Robust

DV: Use ORS		
Variable	Coefficient	(Std. Err.)
Training: Government	0.938**	(0.374)
Training: Local Health Org	1.281***	(0.305)
Training: Int'l Org	-0.100	(0.713)
Education	0.329***	(0.108)
Rural	-0.507**	(0.202)
Food ShortAge	0.086	(0.175)
Has TV	-0.177	(0.255)
Has Electricity	-0.158	(0.273)
Marital Status	0.046	(0.113)
Male	-0.744***	(0.205)
Age	-0.019	(0.100)
Child Died	0.610**	(0.282)
Time to Facility	-0.159	(0.138)
Intercept	1.076*	(0.560)

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

Table F.2: Use Antidiarrheals, Logit, Robust

DV: Use Antidiarrheals		
Variable	Coefficient	(Std. Err.)
Training: Government	-0.683***	(0.212)
Training: Local Health Org	0.685***	(0.217)
Training: Int'l Org	-0.061	(0.597)
Education	0.087	(0.088)
Rural	-0.193	(0.165)
Food Shortage	-0.048	(0.149)
Has TV	0.258	(0.221)
Has Electricity	-0.623***	(0.221)
Marital Status	-0.028	(0.097)
Male	-0.086	(0.191)
Age	-0.012	(0.091)
Child Died	0.313	(0.224)
Time to Facility	-0.598***	(0.104)
Intercept	2.116***	(0.497)

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

Table F.3: ORS is Gold Standard, Logit, Robust

DV: Gold Standard of Treatment is ORS		
Variable	Coefficient	(Std. Err.)
Training: Government	1.284***	(0.271)
Training: Local Health Org	0.633***	(0.175)
Training: Int'l Org	0.264	(0.565)
Education	0.097	(0.078)
Rural	-0.060	(0.145)
Food Shortage	0.051	(0.137)
Has TV	0.200	(0.193)
Has Electricity	-0.171	(0.198)
Marital Status	0.094	(0.083)
Male	0.080	(0.165)
Age	-0.146**	(0.074)
Child Died	-0.017	(0.186)
Time to Facility	0.166	(0.110)
Intercept	0.053	(0.427)

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

Appendix G

Health Newsfile Dataset Coding

Rules

The following contains each variable and the possible codings for the Health Newsfile described in Chapter 5. The primary level of the list contains each variable name and the secondary level contains the coding options for that variable.

- Newspaper
 - Daily Nation
 - Standard
 - The Star
- Date
 - Date of publication: mm/dd/yyyy
- Title
 - Title of article
- Author
- County
 - Kenyan County
 - OR Kenya National

- Issue 1:
 - .m (missing)
 - Drugs
 - Funding
 - HIV Testing
 - Medical Infrastructure
 - MosquitoNets
 - Other
 - Prevention
 - Sanitation
 - Staffing
 - Transportation
 - Vaccination
 - Water
- Problem/Solution 1
 - Is issue one an article about a problem in Kenya or somebody offering a solution
- Action
 - 1 - yes
 - 0 - no
 - .n is if it's a problem
- Visibility
 - 1 - yes
 - 0 - no
 - .n is if it's a problem
- If Solution, P or C
 - If Solution: Preventive is Curative
- Issue 2:
 - .m (missing)
 - Drugs

- Funding
- HIV Testing
- Medical Infrastructure
- MosquitoNets
- Other
- Prevention
- Sanitation
- Staffing
- Transportation
- Vaccination
- Water
- Problem/Solution 2
 - Is issue one an article about a problem in Kenya or somebody offering a solution
- Action2
 - 1 - yes
 - 0 - no
 - .n is if it's a problem
- Visibility2
 - 1 - yes
 - 0 - no
 - .n is if it's a problem
- If Solution, P or C2
 - If Solution: Preventive is Curative
- Beyond Zero
 - 1 - yes
 - 0 - no
- Politician Mentioned
 - 1 - yes
 - 0 - no

- Politician
 - Name
- Politician1Position
 - Politician Position
 - * .n - No politician mentioned
 - * Bureaucrat
 - * Deputy Governor
 - * Deputy President
 - * First Lady
 - * Governor
 - * MCA
 - * MP
 - * President
 - * Senator
 - * Secretary
- Politician Picture
 - 1 yes
 - 0 no
 - .n No politician
- Politician Quote
 - Direct Quote
- What Politician Did
 - Summary of what politician did.
- Source of funding
 - Government or other
- Amount of funding
 - Shillings. No punctuation
- Politician 2 Mentioned
 - 1 - yes
 - 0 - no

- Politician
 - Name
- Politician2Position
 - Politician Position
 - * .n - No politician mentioned
 - * Bureaucrat
 - * Deputy Governor
 - * Deputy President
 - * First Lady
 - * Governor
 - * MCA
 - * MP
 - * President
 - * Senator
 - * Secretary
- Politician 2 Picture
 - 1 yes
 - 0 no
 - .n No politician
- Politician 2 Quote
 - Direct Quote
- What Politician 2 Did
 - Summary of what politician did.
- Politician 3 Mentioned
 - 1 - yes
 - 0 - no
- Politician
 - Name
- Politician3Position
 - Politician Position

- * .n - No politician mentioned
 - * Bureaucrat
 - * Deputy Governor
 - * Deputy President
 - * First Lady
 - * Governor
 - * MCA
 - * MP
 - * President
 - * Senator
 - * Secretary
- Politician 3 Picture
 - 1 yes
 - 0 no
 - .n No politician
 - Politician 3 Quote
 - Direct Quote
 - What Politician 3 Did
 - Summary of what politician did.
 - Politician 4 Mentioned
 - 1 - yes
 - 0 - no
 - Politician4
 - Name
 - Politician4Position
 - Politician Position
 - * .n - No politician mentioned
 - * Bureaucrat
 - * Deputy Governor
 - * Deputy President
 - * First Lady
 - * Governor

- * MCA
- * MP
- * President
- * Senator
- * Secretary

- Politician 4 Picture
 - 1 yes
 - 0 no
 - .n No politician
- Politician 4 Quote
 - Direct Quote
- What Politician 4 Did
 - Summary of what politician did.

Appendix H

Semi-Structured Interview Instrument

The following is the instrument that I used in my semi-structured interviews with Kenyan politicians. As the interviews were semi-structured, not every question was asked to every politician. Questions were asked based on the flow of the conversation and time permitted.

- Please state your name, position, and constituency
- How long have you been in office?
- What services are most important for you to deliver to your constituents?
- What services are most likely to convince your constituents to vote for you in the next election?
- Compared to other kinds of services, how important is it that you deliver health services to your people?
- Which diseases are most important for you to combat?
 - Why these diseases?
 - Does anyone try to influence you to combat these diseases as opposed to other diseases?
- Compared to other diseases, how important is it that you combat childhood diarrhea?
- Do you believe that constituents will be more likely to vote for you if you successfully decrease child mortality?
- In terms of protecting the health of your constituents, what are the most important services for you to deliver?

- In terms convincing your constituents to vote for you in the next election, which health services are most likely to convince them?
- Are there things that you can do to ensure that ORS and other essential medicines are stocked in dispensaries and health centres?
- Are there things that you can do to ensure that the health workers in your constituency are paid their salaries?
- I have noticed in Kenya that many areas have built new hospitals or built new wards on to hospitals, yet there are problems with staff not being paid and stockouts of essential medicines. Can you tell me why politicians would choose to distribute funds to infrastructure rather than staffing and medicines?
 - Is it possible that constituents are more likely to vote for infrastructure development than medicines and staffing? Why?
 - Is it possible that there is more corruption in the contracting of infrastructure than there is in supplying medicines? How common do you think this corruption is in the whole of Kenya?

Appendix I

2014 Survey Instrument: Survey of Kenyan Constituents

Below is the survey instrument that was used in my 2014 survey of Kenyan constituents. The survey itself was conducted using smartphone technology, not pen and paper. In this appendix, the Swahili version of each question appears in blue and the English version of each question appears in black. Respondents were allowed to choose to hear the survey questions in either English or Swahili. After making that choice, the survey appeared entirely in English or entirely in Swahili (the enumerator was not looking at a copy in both languages like appears in this appendix). Instructions in **BOLD** were instructions given to the programmers that created the smartphone app (instructions such as if each question had a single answer or if they could check all that apply and instructions for the survey's skip routine). Instructions that are in **Bold but not all caps** are instructions that were left for the enumerator, such as when they were supposed to read all the response options to the respondent.



Survey: Preventing Child Mortality: Government Responsiveness and Political Accountability in Kenya

Province:

1. Western
2. Nyanza

County:

If PROVINCE is Western

1. Vihiga
2. Kakamega
3. Busia
4. Bungoma

If PROVINCE is Nyanza

1. Kisumu
2. Siaya
3. Nyando
4. Homa Bay

Location / Sampling Area:

Gender:

1. Male
2. Female

INTRODUCTION

Hello, my name is _____ from Ipsos Limited. You are being asked to participate in a research project for academic study. Before you give your consent to participate, it is important that you read the following information and ask any questions you may have to be sure you understand what you will be asked to do.

Hello, jina langu niKutoka kampuni ya Ipsos Limited. Unaombwa kushirikatika utafiti wa kimasomo. Kabla ya kupeana idhini yako ya kushiriki, ni muhimu kusoma nakala hii na kuuliza maswali yoyote unaweza kuwa nayo ndio uwe na uhakika kuwa unaelewa utakaloulizwa kufanya

Purpose of the Study:

The purpose of this research study is to find out more about the attitudes and behaviors of Kenyans regarding child health, and the role of the government in child health. You have been asked to participate in this study because you are a Kenyan citizen of voting age.

Sababu ya Utafiti:

Sababu ya utafiti huu ni kuelewa Zaidi kuhusu tabia ya WaKenya kuhusu afya ya watoto na uwajibikaji wa serekali katika afya ya watoto. Umeombwa kushiriki katika utafiti huu kwa sababu wewe ni Mkenya aliye hitimu umri wa kupiga kura

What will happen in this research study:



If you decide to participate, you will complete a survey of about 30 minutes. Your responses to the survey will be recorded anonymously – your name will not be used at all. Participation in research is entirely voluntary. You are free to answer every question, or skip questions as you please.

Nini litatendeka katika utafiti huu:

Ukikubali kushiriki, utakamilisha mahojiano ya muda wa takriban dakika 30. Majibu yako kwa mahojiano haya yatanakkiliwa kwa usiri – jina lako halitatumika kamwe. Kushiriki mahojiano ni kwa hiari. Una uhuru wa kujibu kila swali au kuruka swali kama unavyotaka.

You may call the UCSD Human Research Protections Program Office at 1-858-657-5100 to inquire about your rights as a research subject or to report research-related problems. I will give you more information on the study and the name and number of the researcher at Ipsos Limited who you can contact if you have any questions or concerns.

Waweza piga simu katika UCSD Human Research Protections Program Office kupitia 1-858-657-5100 ili kulizia kuhusu haki zako kama mhojiwa katika utafiti au kutoa habari kuhusu tatizo za kiutafiti. Nitakupatia ujumbe Zaidi kuhusu hii utafiti na jina na nambari ya mtafiti wa Ipsos Limited ambaye unaweza kuwasiliana naye ikiwa una swali au wasi wasi

By completing the survey you agree to participate.

Ukikubali, utashiriki kwenye utafiti huu

A. SCREENING QUESTIONS

S1. Will you allow me to interview you? / Je, utaniruhusu kukuhoji?

1. Yes / **Ndiyo Continue**
2. No / **La – Thank and Terminate**

S2. Do you have a child(ren) under 5 years of age? / Je, uko na (wa) (m)toto chini ya miaka 5?

1. Yes: / **Ndiyo Continue**
2. No / **La - Terminate**

S3. How old are you? / Uko na umri upi?

1. Below 18 years / Chini ya miaka 18 > **Terminate**
2. 18 – 24 years / **Miaka 18 hadi 24**
3. 25 – 34 years / **Miaka 25 hadi 34**
4. 35 – 44 years / **Miaka 35 hadi 44**
5. 45 – 49 years / **Miaka 45 hadi 49**
6. 50+ years / **Zaidi ya miaka 50**

IF NOT ABOVE 18 YEARS, THANK RESPONDENT AND END INTERVIEW

S4. Do you make decisions on the medical treatment your child under 5 years old is given when they are sick? / Je, unafanya maamuzi kuhusu matibabu ambayo mtoto wako wa umri wa chini ya miaka 5 anapewa akiwa mgonjwa?

1. Yes / **Ndiyo**
2. No / **La**



S5. Have any of your children ever suffered from diarrhea (passing watery stools)? / Je, Kunaye mtoto amewahi adhirika ugonjwa wa kuendesha (kupitisha kinyesi maji maji) kati ya watoto wako?

1. Yes / Ndiyo : **Continue**
2. No / La : **Terminate**

Date of Interview

B. PRELIMINARY POLITICAL QUESTIONS

B1. What are the most serious problems facing your locality today? / Je, ni matatizo gani kuu yanayokumba eneo lako leo? **FULL VERBATIM. ALLOW UPTO THREE MENTIONS**

B2. Of the following options, what are the most serious problems facing your locality today? Choose a most serious problem (1), second most serious problem (2), and third most serious problem (3) / Kati ya yafuatayo, ni matatizo gani kuu inayokumba eneo lako leo? Chagua tatizo kuu Zaidi, (1), chagua ya pili kuu (2), na chagua ya tatu kuu (3). **(USE SHOWCARD)**

- Poor Health of our children / Afya mbaya ya watoto wetu
- Poor Healthcare / Huduma ya kiafya iliyo mbaya
- High Cost of Living / Gharama ya maisha iliyo juu
- Poverty / Umaskini
- Lack of Employment / Ukosefu wa ajira
- Poor leadership / Uongozi mbaya
- Corruption / Ufisadi
- Tribalism / Ukabila
- Crime / Insecurity / Ukosefu wa usalama
- Poor infrastructure / Muundo msingi mbaya
- Poor Education for our children / Elimu mbaya kwa watoto wetu
- Lack of clean water / Ukosefu wa maji safi
- Do not Read: Do not Know / Sijui
- Do not Read: Refuse to Answer / Amekataa kujibu
- Do not Read: Refuse to Answer / Amekataa kujibu
- Do not Read: Refuse to Answer / Amekataa kujibu

B3. Which categories would you most like to see the government improve? Choose your first preference (1), second preference (2), and third preference (3) / Ni kitengo ipi ungependa kuona serekali imeboresha? Chagua unayopendelea ya kwanza (1), Unapendelea ya pili (2), Unapendelea ya tatu (3). **(USE SHOWCARD)**

- Healthcare (Improved life expectancy for children, clean water, sanitation, health facilities, medicines) / Huduma ya afya (Boresha kuzaliwa kwa watoto, maji safi, usafi, vituo vya afya, madawa)
- Child care (healthcare and education) / Utunzi wa watoto (huduma za afya na elimu)
- Economy (High cost of living, poverty, lack of employment) / Uchumi (Gharama ya juu ya maisha, umaskini, ukosefu ajira)
- Security (Crime, threat of Al Shabab attack) / Usalama (Ujambazi, tisho la kuvamiwa na Al Shabab)
- Infrastructure (roads, electricity) / Muundo msingi (barabara, stima)
- Do not Read: Do not Know / Sijui
- Do not Read: Refuse to Answer / Amekataa kujibu
- Do not Read: Refuse to Answer / Amekataa kujibu
- Do not Read: Refuse to Answer / Amekataa kujibu



B4. In terms of improving life expectancy for children, which service would you most like to see the government provide more of? / Kwa kuboresha uzalishaji wa watoto, ni huduma gani ungependa kuona sirikali ikipeana zaidi? (Randomize Order of Responses) Single Answer. Read Out.

1. Chlorine for Water / Klorini ya maji
2. Essential Medicines / Madawa ya msingi
3. Latrines / Vyoo
4. Refuse Collection / Kuzowa taka
5. Do not Read: Do not Know / Sijui
6. Do not Read: Refuse to Answer / Amekataa kujibu

C. Information on the child / household

C1. How many children are there in this household aged...../ Ni watoto wangapi walio katika nyumba yako walio na umri wa(READ OUT)

- Below 12 months (0 – 11 months) / Chini ya miezi 12 (miezi 0 -11) []
- Between 1 – 5 years / Kati ya miaka 1 - 5 []

C2a. Have you (or your wife) ever given birth to a child who was born alive but later died at an age of less than 5 years? / Je, wewe (au bibi) umewahi (au amewahi) kuzaa mtoto aliye hai kisha baadaye akafariki akiwa na umri wa chini ya miaka 5? Single Answer. READ OUT.

1. Yes / Ndiyo > Continue to C2b and C2c
2. No / La > Continue to D1

C2b. how many child(ren) was/were born alive but later died at an age of less than 5 years? / Ni watoto wangapi walizaliwa hai kisha baadaye wakafariki wakiwa na miaka chini ya 5? Restrict to 5 children Multiple Answer. FULL VERBATIM.

C2c. For each child that has died, at what age did he or she die? / Alifariki akiwa na umri gani? Multiple Answer. FULL VERBATIM.

C2d. For each child that has died, from what cause did he or she die? / Ni nini kilisababisha yeye kufariki? Multiple Answer. FULL VERBATIM.

D. KNOWLEDGE AND PRACTICES RELATED TO THE TREATMENT OF DIARRHEA



D1. Have any of your children (READ OUT AGE) been sick with diarrhea (passing watery stools) in the past one month? / Je mtoto wako yeyote (SOMA UMR) amegonjeka ungonjwa wa kuendesha (kupitisha kinyesi maji maji) katika muda wa mwezi moja uliopita?

- | | Under 1
year /
Chini ya
mwaka 1 | 1 – 5 years / Mwaka 1 - 5 |
|----------------|--|---------------------------|
| 1. Yes / Ndiyo | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. No / La | <input type="checkbox"/> | <input type="checkbox"/> |

D2 Which of the following most closely matches your feelings regarding diarrheal diseases (passing watery stools) in children? / Ni ipi kati ya yafuatayo inakaribiana kwa karibu sana na hisia zako kuhusu ugonjwa wa kuendesha (Kupitisha kinyesi maji maji) kwa watoto? **Single Answer. READ OUT**

1. Diarrhea is a cleansing process, and is good for the child / Kuendesha ni mtindo wa kusafisha na ni nzuri kwa watoto
2. Diarrhea is a normal process for a child, and is neither good nor bad / Kuendesha ni mtindo wa kawaida kwa watoto na sio nzuri wala mbaya
3. Diarrhea is harmful, but not deadly / Kuendesha ni hatari, lakini sio la kuua
4. Diarrhea is potentially deadly / Kuendesha ina uwezo wa kuua

888. Do Not Read: Don't Know / Sijui

999. Do Not Read: Refuse to Answer / Amekataa kujibu

D3. Which of the following most closely matches your feelings regarding the treatment of diarrheal diseases in children? / Ni gani kati ya hizi inaeleza kwa ukaribu hisia zako kuhusu matibabu ya ugonjwa wa kuendesha kwa watoto? **Single Answer. READ OUT**

1. Treatment is unnecessary / Matibabu si lazima
 2. Treatment is necessary / Matibabu ni lazima
999. Do Not Read: Refuse to Answer / Amekataa kujibu

D4a. Have you ever received any training in how to treat your children's diarrhea? / Je umewahi pokea funzo jinsi ya kutibu watoto wako wanapoendesha? **Single Answer. READ OUT**

1. Yes / Ndiyo > Continue to D4b
2. No / La > Skip to D5

D4b. From whom did you receive training on how to treat your children's diarrhea? / Ni kutoka kwa nani ulipokea funzo jinsi ya kutibu watoto wako wanapoendesha?

Mark all that apply. READ OUT

1. The government / Serikali
2. A local health organization / Shirika la kiafya la mtaani
3. An international organization / Shirika la kimataifa
4. A family member / Mtu wa familia



5. A friend / Rafiki
 6. Other: _/ Nyingine (Eleza) _____
 888.Do Not Read: Don't Know / Sijui
 999.Do Not Read: Refuse to Answer / Amekataa kujibu

D5 . In your opinion, how severe is the issue of childhood diarrhea (passing watery stools) in Kenya? / Je, kwa maoni yako ungesema shida ya kuendesha (Kupitisha kinyesi maji maji) kwa watoto nchini Kenya ni ya kiwango gani? **Single Answer. READ OUT**

1. It is not a problem / Siyo shida
 2. It is a minor problem / Ni shida ndogo
 3. It is a serious problem / Ni shida kuu
- 888.DO NOT READ: Don't Know / Sijui
 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

D6. In your opinion, how severe is the issue of childhood diarrhea (passing watery stools) in your local community? / Je Kwa maoni yako ungesema shida ya kuendesha(Kupitisha kinyesi maji maji) kwa watoto katika jami yako ni ya kiwango gani? **Single Answer. READ OUT**

1. It is not a problem / Siyo shida
 2. It is a minor problem / Ni shida ndogo
 3. It is a serious problem / Ni shida kuu
- 888.DO NOT READ: Don't Know / Sijui
 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

D7 . What do you think are 3 the most important causes of childhood diarrhea? / Ni nini unafikiri ni mambo tatu kuu muhimu yanayo sababisha kuendesha kwa watoto? **Multiple Answer FULL VERBATIM (allow up to 3 mentions)**

a) Open ended response

D8. When your child (under the age of 5) has diarrhea, how do you normally treat it? / Wakati mtoto wako(chini ya umri wa miaka 5) ako na ugonjwa ya kuendesha je kwa kawaida wewe hutibu aje? **Single Answer FULL VERBATIM**

a) Open ended response

D9. Of the following options, what do you think is the best treatment for diarrhea in a child under 5 years old? / Kwa maoni yafuatayo ni nini unafikiri kuwa ni matibabu mwafaka ya ugonjwa wa kuhara kwa mtoto wa umri wa chini ya miaka 5? **Single Answer. READ OUT**

1. No Treatment / Hakuna matibabu
2. Hydration, such as Oral Rehydration Solutions / Dawa ya kuzuia kupoteza maji mingi mwilini kama Oral Rehydration Solutions (ORS)
3. Anti Diarrheal Drug / Dawa ya kuzuia kuendesha
4. Antibiotics / Dawa ya kinga dhidi ya viini
5. Give the child no/very little food or liquid / Kupatia watoto chakula au kinyuaji kidogo
6. Increase food and liquids / Ongeza chakula na maji



- 7. Herbal Medication / [Dawa ya kiasili](#)
- 8. Other(Specify): / [Nyingine \(Eleza\)](#)
- 888.Do Not Read: Don't Know / [Sijui](#)
- 999.Do Not Read: Refuse to Answer / [Amekataa kujibu](#)



D10. When your child is experiencing diarrhea, how much liquid do you give him or her? /

Wakati mtoto wako anaugua ugonjwa wa kuendesha je unampa kinyuaji kiasi gani?

Single Answer. READ OUT

1. Nothing to drink at all / Hakuna kinyuwaji lolote
2. Less than usual / Chini ya kawaida
3. About the same as usual / Karibu ya sawa na kawaida
4. More than usual / Zaidi ya kawaida

888.Do Not Read: Don't Know / Sijui

999.Do Not Read: Refuse to Answer / Amekataa kujibu

D11. When a child is experiencing diarrhea, most women in your community would

give him or her how much liquid? / Wakati mtoto anaugua ugonjwa wa kuendesha

je wanawake wengi wa jami yako watampatia kinyuaji kiasi gani? **Single Answer.**

READ OUT

1. Nothing to drink at all / Hakuna kinyuwaji lolote
2. Less than usual / Chini ya kawaida
3. About the same as usual / Karibu ya sawa na kawaida
4. More than usual / Zaidi ya kawaida

888.Do Not Read: Don't Know / Sijui

999.Do Not Read: Refuse to Answer / Amekataa kujibu

D12. When your child is experiencing diarrhea, how much food do you give him or her? /

Wakati mtoto wako anaugua ugonjwa wa kuendesha je unampatia chakula kiasi

gani? **Single Answer. READ OUT**

1. Nothing to eat at all / Hakuna chakula yoyote
2. Less than usual / Chini ya kawaida
3. About the same as usual / Karibu ya sawa na kawaida
4. More than usual / Zaidi ya kawaida

888.Do Not Read: Don't Know / Sijui

999.Do Not Read: Refuse to Answer / Amekataa kujibu

D13. When a child is experiencing diarrhea, most women in your community would

give him or her how much food? / Wakati mtoto anaugua ugonjwa wa kuendesha

je wanawake wengi wa jamii yako watampatia chakula kiasi gani? **Single Answer.**

READ OUT

1. Nothing to eat at all / Hakuna chakula yoyote
2. Less than usual / Chini ya kawaida
3. About the same as usual / Karibu ya sawa na kawaida
4. More than usual / Zaidi ya kawaida

888.Do Not Read: Don't Know / Sijui

999.Do Not Read: Refuse to Answer / Amekataa kujibu



D14. When your child is experiencing diarrhea, do you give him or her anti-diarrheals to stop the symptoms? / **Wakati mtoto wako anaugua ugonjwa wa kuendesha je wewe humpatia dawa ya kuzuia dalili?** **Single Answer. READ OUT**

1. Yes / **Ndiyo**
2. No / **La**
888. Do Not Read: Don't Know / **Sijui**
999. Do Not Read: Refuse to Answer / **Amekataa kujibu**

D15. When a child is experiencing diarrhea, do you think most women in your community would give him or her anti-diarrheals to stop the symptoms? / **Wakati mtoto anaugua ugonjwa wa kuendesha je unafikiria wanawake wengi wa jami yako watawapatia dawa ya kuzuia dalili?** **Single Answer. READ OUT**

1. Yes / **Ndiyo**
2. No / **La**
888. Do Not Read: Don't Know / **Sijui**
999. Do Not Read: Refuse to Answer / **Amekataa kujibu**

D16. In your family, who primarily decides which treatment to give a child when they are ill? / **Katika familia yako, ni nani anafanya maamuzi ya kimsingi kuhusu matibabu ya kupatia watoto wako wanapougua?** **Single Answer. READ OUT.**

1. Child's Father / **Baba wa mtoto**
2. Child's Mother / **Mama wa mtoto**
3. Child's Maternal Grandmother / **Nyanya ya mtoto**
4. Child's Paternal Grandmother / **Babu wa mtoto**
5. Other: ___ / **Nyingine (Eleza) _____**
999. Do Not Read: Refuse to Answer / **Amekataa kujibu**

E. Oral Rehydration Solution

E1. Have you ever heard of Oral Rehydration Solution (ORS) that you can get for the treatment of diarrhea? / **Je umewahi kusikia kuhusu ORS unayoweza kupata kwa matibabu ya ugonjwa wa kuendesha?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo** > **Continue to E2**
2. No / **La** > **Go to Zinc section QF1**

E2. When your child is experiencing diarrhea, do you give him or her ORS? / **Wakati mtoto wako anaugua ugonjwa wa kuendesha, je wewe humpatia ORS?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo**
2. No / **La**
888. Do Not Read: Don't Know / **Sijui**
999. Do Not Read: Refuse to Answer / **Amekataa kujibu**



E3. When a child is experiencing diarrhea, would most women in your community give him or her ORS to keep them hydrated? / **Wakati mtoto anakabiliwa na ugonjwa wa kuendesha, je wanawake wengi katika jamii yako wanawapatia ORS ili kuwalinda dhidi ya kupoteza maji mingi mwilini?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo**
 2. No / **La**
- 888.Do Not Read: Don't Know / **Sijui**
999.Do Not Read: Refuse to Answer / **Amekataa kujibu**

E4. What are the benefits of giving ORS to a child who is ill with diarrhea? / **Je ni nini faida ya kupeana ORS kwa mtoto anayeugua ugonjwa wa kuendesha?** **Multiple Answer. FULL VERBATIM.**

E5a. Are there negative consequences to using Oral Rehydration Solution? / **Je kunayo madhara ya matumizi ya ORS?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo** > **Continue with E5b**
2. No / **La** > **Go to E6a**

E5b. If so, what are they? / **Ikiwa ipo ni gani?** **Multiple Answers – FULL VERBATIM**

- a) Open ended response

E6a. Has anyone ever advised you to not give children ORS? / **Je kunayo mtu yeyote amewahi kukushauri usiwapatie watoto ORS?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo** > **Continue with E6b**
2. No / **La** > **Go to Zinc section QF1**

E6b. If so, who? / **Ikiwa hivyo ni nani?** (Mark all that apply) **Multiple Answer. READ OUT.**

1. A male family member / **Mtu wa familia wa kiume**
2. A female family member / **Mtu wa familia wa kike**
3. A village leader / **Kiongozi wa kijiji**
4. An influential member of the village / **Mwanakijiji mwenye ushawishi**
5. A community health worker / **Mfanyikazi wa afya wa kijamii**
6. Other: / **Nyingine (Eleza)**

888.Do Not Read: Don't Know / **Sijui**
999.Do Not Read: Refuse to Answer / **Amekataa kujibu**

F. Zinc

F1. Have you heard of zinc tablets that you can get for the treatment of diarrhea? / **Je umesikia kuhusu tembe za zinc unazoweza kupata ili kutibu ugonjwa wa kuendesha?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo** > **continue to F2**
2. No / **La** > **Skip to G1**



F2. When your child is experiencing diarrhea, do you give him or her zinc tablets? / **Wakati mtoto wako anaugua ugonjwa wa kuendesha je wewe humpatia tembe za zinc?**
Single Answer. READ OUT

1. Yes / **Ndiyo**
2. No / **La**
888. Do Not Read: Don't Know / **Sijui**
999. Do Not Read: Refuse to Answer / **Amekataa kujibu**

F3. When a child is experiencing diarrhea, would most women in your community give him or her zinc tablets? / **Wakati mtoto anaugua ugonjwa wa kuendesha je wanawake katika jamii yako wanawapatia tembe za zinc?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo**
2. No / **La**
888. Do Not Read: Don't Know / **Sijui**
999. Do Not Read: Refuse to Answer / **Amekataa kujibu**

F4. What are the benefits of giving zinc tablets to a child who is ill with diarrhea? / **Ni zipi faida za kupeana tembe za zinc kwa watoto wananougua ugonjwa wa kuendesha?**

Multiple Answer. FULL VERBATIM.

F5a. Are there negative consequences to using zinc? / **Je, kuna madhara za matumizi ya Zinc?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo** > **Continue with F5b**
2. No / **La** > **Go to F6a**

F5b. If so, what are they? / **Kama ni hivyo ni zipi?** **Multiple Answers – FULL VERBATIM**

a) Open ended response

F6a. Has anyone ever advised you to not give children ZINC? / **Je, kuna mtu yeyote aliwahi kukushauri usiwapatie watoto wako zinc?** **Single Answer. READ OUT.**

1. Yes / **Ndiyo** > **Continue with F6b**
2. No / **La** > **Go to Dispensaries section QG1**

F6b. If so, who? / **Kama hivyo ni nani?** (Mark all that apply) **Multiple Answer. READ OUT.**

1. A male family member / **Mtu wa familia wa kiume**
2. A female family member / **Mtu wa familia wa kike**
3. A village leader / **Kiongozi wa kijiji**
4. An influential member of the village / **Mwanakijiji mwenye ushawishi**
5. A community health worker / **Mfanyikazi wa afya wa kijamii**
6. Other: / **Nyingine (Eleza)**

888. Do Not Read: Don't Know / **Sijui**

999. Do Not Read: Refuse to Answer / **Amekataa kujibu**



G. Dispensaries

G1. When your child is experiencing diarrhea, where do you mostly go for treatment? / Wakati mtoto wako anaugua ugonjwa wa kuendesha, ni wapi unaenda sana sana kwa matibabu? **Single Answer. USE SHOWCARD.**

1. Government Hospital / Hospitali ya serikali
 2. Private Hospital / Hospitali ya kibinafsi
 3. Government Health centre / Kituo cha matibabu cha serikali
 4. Government Dispensary / Zahanati ya serikali
 5. Private Health centre / Kituo cha matibabu cha kibinafsi
 6. Private Dispensary / Zahanati ya kibinafsi
 7. Pharmacy only (without seeing a health worker elsewhere) / Duka la dawa (bila ya kutafuta ushauri wa mhuduma wa kiafya mahali pengine)
 8. A community health worker / Mhudumu wa kiafya wa kijamii
 9. A local/ traditional healer / Mponyaji wa kienyeji wa eneo lako
 10. A preacher for prayers / Mhubiri wa maombi
 11. I do not take my child anywhere (exclusive answer) / Simpeleki mtoto wangu popote
 12. Other (specify): / Nyingine (Eleza)
888. Do Not Read: Don't Know / Sijui
999. Do Not Read: Refuse to Answer / Amekataa kujibu

G2. How long does it take you to reach the health provider that you answered in G1? / Je inakuchukuwa muda gani kufika katika huduma ya kiafya - {0}? **Single Answer. READ OUT. Ask this if coded 1-10 or 12 in G1**

1. Less than 30 minutes / Chini ya dakika 30
 2. Between 30 minutes and 1 hour / Kati ya dakika 30 na saa 1
 3. Between 1 and 2 hours / Kati ya saa 1 na masaa 2
 4. Between 2 and 3 hours / Kati ya masaa 2 na 3
 5. Greater than 3 hours / Zaidi ya masaa 3
888. Do Not Read: Don't Know / Sijui
999. Do Not Read: Refuse to Answer / Amekataa kujibu

Ask G3 if government dispensary is not coded in G1

G3. If you do not go to the government dispensary, what is the primary reason? / Ikiwa huendi katika zahanati za serikali, ni nini sababu yako kuu? **Single Answer FULL VERBATIM**

- a) Open ended response



G4a. Have you ever attempted to receive ORS at a dispensary or health facility? / Je umewahi kujaribu kupokea ORS katika zahanati au kituo cha afya? **Single Answer. READ OUT.**

1. Yes / Ndiyo > **Continue with G4b and G4c**
2. No / La > **Go to G5a**
888. Don't Know / Sijui > **Go to G5a**
999. Do Not Read: Refuse to Answer / Amekataa kujibu > **Go to G5a**

G4b. Have you ever arrived at a dispensary or health facility and found that they are out of stock of ORS? / Je umewahi kufika katika zahanati au kituo cha afya na ukapata wako na uhaba wa ORS? **Single Answer. READ OUT.**

1. Yes/Ndiyo
2. No/La
- 888.Do Not Read: Don't Know / Sijui
- 999.Do Not Read: Refuse to Answer / Amekataa kujibu

G4C. If you have received ORS at a dispensary or health facility, were you asked to pay for it? How much? / Ikiwa umepokea ORS katika zahanati au kituo cha afya, je uliulizwa kuulipia? Pesa ngapi? **Single Answer. READ OUT.**

1. Not asked to pay / Sikuulizwa kulipa
2. Yes: / Ndiyo _____
- 888.Do Not Read: Don't Know / Sijui
- 999.Do Not Read: Refuse to Answer / Amekataa kujibu

G5a. In your opinion, what is the primary reason that government dispensaries have experienced stock-outs of essential medicines? / Kwa maoni yako ni nini sababu ya kimsingi inayosababisha uhaba wa madawa muhimu katika zahanati za serikali? **Single Answer. FULL VERBATIM**

G5b. In your opinion, what is the primary reason that government dispensaries have experienced stock-outs of ORS / Kwa maoni yako ni nini sababu ya kimsingi inayosababisha uhaba wa ORS muhimu katika zahanati za serikali? **Single Answer. FULL VERBATIM**

G6. Of the following options, which government dispensary is closest to your home? / Ni Zahanati ipi iliyo karibu na wewe? **Single Answer. SHOWCARD. Interviewer root from COUNTY and input the response.**

If COUNTY is Vihiga:

1. BOYANI Dispensary
2. HAMISI BAPTIST Dispensary
3. LIKINDU Dispensary



4. MUSITINYI Dispensary
5. NANDAYA Dispensary
6. ROYAL MEDICAL CENTRE
7. SHAMAKHOKHO Dispensary
8. SHIRU Dispensary
9. TIRIKI Dispensary
888. Do Not Read: Do not know / [Sijui](#)
999. Do Not Read: Refuse to Answer / [Amekataa kujibu](#)

If COUNTY is Kakamega

1. BUDONGA DISP
2. CHOMBELI DISP.
3. ESHIKHUYU DISP
4. ESHSHURU DISP
5. KAKAMEGA FOREST DISP
6. KHARANDA DISP
7. KUVASALI DISP
8. NAMAGARA DISP
9. SAVANE DISP
10. SHIHOME DISP
11. SHIKUSI DISP
12. SHIVANGA DISP
13. SINGO DISP
14. SIVILIE DISP
888. Do Not Read: Do Not Know / [Sijui](#)
999. Do Not Read: Refuse to Answer / [Amekataa kujibu](#)

If COUNTY is Busia

1. AGENGA DISP
2. BUDALANGI DISP
3. BUDUTA DISP
4. BULWANI DISP
5. BURINDA DISP
6. BUSEMBE DISP
7. BUSIBWABU DISPENSARY
8. BUTMUTIRU DISP
9. BWALIRO DISPENSARY
10. HAKATI DISP
11. IGARA DISP
12. KHAYO DISP
13. MADENDE DISP
14. MADUWA DISP
15. MALANGA DISP
16. MUNDONGO DISPENSARY



- 17. MUNONGO DISP
- 18. NAMBUKU DISP
- 19. NANGINA DISP
- 20. RUKALA DISP
- 21. SISENYE DISP
- 888. Do Not Read: Do
Not Know / [Sijui](#)
- 999. Do Not Read: Refuse
to Answer / [Amekataa](#)
[kujibu](#)

If COUNTY is Bungoma

- 1. BULONDO DISP
- 2. BUNGOMA GK PRISON DISP
- 3. CHEBUKUTUMI DISP
- 4. KABULA DISP
- 5. KARIMA DISP
- 6. KAVUJAI DISP
- 7. KIMAETI DISP
- 8. KONGOLI DISP
- 9. KOROSIANDET DISP
- 10. LUKUSI DISP
- 11. MAKHONGE DISP
- 12. MAKUTANO DISP
- 13. MALOMONY DISP
- 14. MIHUU DISP
- 15. MILO DISP
- 16. MUKHE DISP
- 17. SHIKENDU DISP
- 18. SITUKHO DISP
- 19. TAMLEGA DISP
- 20. TONGARENI DISP
- 888. Do Not Read: Do
Not Know / [Sijui](#)
- 999. Do Not Read: Refuse
to Answer / [Amekataa](#)
[kujibu](#)

If COUNTY is Kisumu

- 1. AKADO DISP
- 2. ARITO DISP
- 3. BODI DISP
- 4. BOLO DISP
- 5. GOT NYABONDO DISP
- 6. HONGO NGOSA DISP
- 7. KANDEGE DISP
- 8. MIRANGA DISP
- 9. NDURU KADERO DISP
- 10. NYANGANDE DISP
- 11. OGEN DISP



- 12. RABOUR DISP
- 13. RERU DISP
- 14. ROTA DISP
- 15. SIRIBA DISP
- 888. Do Not Read: Do
Not Know / [Sijui](#)
- 999. Do Not Read: Refuse
to Answer / [Amekataa](#)
[kujibu](#)

If COUNTY is Siaya

- 1. AKALA DISP
- 2. AMBIRA DISP
- 3. BAR ALENGO DISP
- 4. BAR UCHUTH DISP
- 5. BORO DISP
- 6. DIENYA DISP
- 7. HAWINGA DISP
- 8. JERA DISP
- 9. KADENGE RATUORO DISP
- 10. KALUO DISP
- 11. KOGELO DISP
- 12. LIGEGA DISP
- 13. MARENYO DISP
- 14. MIDHINE DISP
- 15. NYAMBARE DISP
- 16. NYANGÄS DISP
- 17. RABAR DISP
- 18. RATUORO DISP
- 19. SIFUYO DISP
- 20. SIKALAME DISP
- 21. SIMENYA DISP
- 22. TINGARE DISP
- 23. TING'WANG'I DISP
- 24. URENGA DISP
- 888. Do Not Read: Do
Not Know / [Sijui](#)
- 999. Do Not Read: Refuse
to Answer / [Amekataa](#)
[kujibu](#)

If COUNTY is Nyando

- 1. ANDIGO OPANGA DISP
- 2. BONDE DISP
- 3. BUNDE DISPENSARY
- 4. CHEMELIL DISP
- 5. KANDEGE DISP
- 6. KIBIGORI DISP
- 7. KIBOKO DISP



- 8. KINASIA DISP
- 9. MAKINDU DISP
- 10. MINARA DISP
- 11. NYAMARIMBA DISP
- 12. OBOCH DISP
- 13. SANGOROTA DISP
- 888. Do Not Read: Do Not Know / [Sijui](#)
- 999. Do Not Read: Refuse to Answer / [Amekataa kujibu](#)

If COUNTY is Homa Bay

- 1. KANYAMKAGO OBER DISP
- 2. LAMBWE FOREST DISP
- 3. MALELA DISP
- 4. MARINDI DISP
- 5. NYARONGI DISP
- 6. OBER KABUOCH DISP
- 7. OMBO KACHIENG DISP
- 8. OYARO DISP
- 9. RAPETH DISP
- 888. Do Not Read: Do Not Know / [Sijui](#)
- 999. Do Not Read: Refuse to Answer / [Amekataa kujibu](#)

H. Politics

H1. Do you think service provision in your local community is excellent, good, just fair, or poor? / Je unafikiri kuwa utoaji huduma katika eneo lako ni Nzuri Zaidi, nzuri, Wastani au mbaya? **Single Answer. READ OUT.**

- 1. Excellent / [Nzuri zaidi](#)
- 2. Good / [Nzuri](#)
- 3. Just Fair / [Wastani](#)
- 4. Poor / [Mbaya](#)
- 888. DO NOT READ: Don't Know / [Sijui](#)
- 999. DO NOT READ: Refuse to Answer / [Amekataa kujibu](#)

H2. Do you think the condition of health services in your local community is excellent, good, just fair, or poor? / Je unafikiria kuwa hali ya huduma ya afya katika eneo lako ni Nzuri zaidi, nzuri, au mbaya? **Single Answer. READ OUT.**

- 1. Excellent / [Nzuri zaidi](#)
- 2. Good / [Nzuri](#)
- 3. Just Fair / [Wastani](#)
- 4. Poor / [Mbaya](#)
- 888. DO NOT READ: Don't Know / [Sijui](#)
- 999. DO NOT READ: Refuse to Answer / [Amekataa kujibu](#)



H3. How much trust do you have in medical interventions that are promoted by the government? / Ni uaminifu kiasi gani unayo kwa ubunifu wa kimatibabu yanayopendekezwa na serikali? **Single Answer READ OUT**

1. Very little trust / Uaminifu kidogo sana
 2. Little trust / Uaminifu kidogo
 3. Indifferent / Bila tofauti
 4. Some trust / Uaminifu kiasi
 5. A lot of trust / Uaminifu zaidi
888. DO NOT READ: Don't Know / Sijui
999. Do Not Read: Refuse to Answer / Amekataa kujibu

H4a. Do you believe that the government should be responsible for ensuring the health of Kenyan children? / Je unaamini kuwa serikali inapaswa kuwajibika kwa kulinda afya ya watoto? **Single Answer. READ OUT.**

1. Yes / Ndiyo > continue to H4b
2. No / La > Skip to H5

H4b. Which level of government do you feel should be more responsible for ensuring the health of children? / Ni kiwango gani cha serikali unahisi inapaswa kuwajibika kutunza afya ya watoto? **Single Answer. READ OUT.**

1. County government / Serikali ya kaunti
 2. National government / Serikali kuu
 3. Both Equally / Zote kwa usawa
999. Do Not Read: Refuse to Answer / Amekataa kujibu

H5. Imagine the following scenario and give me your opinion: / Fikiria kuhusu tukio zifuatayo na unipatie maoni **Randomly Select either Version 1 or Version 2 (50% / 50%)**

Version 1: Imagine that an MP visiting from Nairobi visits families in your community and endorses the use of zinc. He says he gives it to his child when his child experiences diarrhea. How likely would you be to use zinc the next time your child is ill? / Fikiria kuwa mbunge kutoka Nairobi ametembelea familia katika jamii yako na kupendekeza matumizi ya Zinc. Akasema kuwa yeye huwapa watoto wake wanapougua ugonjwa wa kuendesha. Je ni kwa kiwango gani unaweza kutumia zinc wakati mwingine mtoto wako akigonjeka? **Single Answer. READ OUT.**

1. Very unlikely / Haiwezekani kabisa
 2. Somewhat unlikely / Haiwezekani kiasi
 3. Indifferent / Bila tofauti
 4. Somewhat likely / Inawezekana kiasi
 5. Very likely / Inawezekana kabisa
999. Do Not Read: Refuse to Answer / Amekataa kujibu



Version 2: Imagine that a Woman Representative visiting from Nairobi visits families in your community and endorses the use of zinc. She says she gives it to her child when her child experiences diarrhea. How likely would you be to use zinc the next time your child is ill? / *Fikiria kuwa Mwakilishi wa akina mama katika bunge kutoka Nairobi ametembelea familia katika jamii yako na kupendekeza matumizi ya zinc. Akasema kuwa yeye huwapa watoto wake wanapougua ugonjwa wa kuendesha. Je ni kwa kiwango gani unaweza kutumia zinc wakati mwingine mtoto wako akigonjeka?* **Single Answer. READ OUT.**

1. Very unlikely / *Haiwezekani kabisa*
 2. Somewhat unlikely / *Haiwezekani kiasi*
 3. Indifferent / *Bila tofauti*
 4. Somewhat likely / *Inawezekana kiasi*
 5. Very likely / *Inawezekana kabisa*
- 999.Do Not Read: Refuse to Answer / *Amekataa kujibu*

H6. In the following scenario, I will present you with two hypothetical candidates who are running against each other in an election for political office. I want you to listen to what issues they support, and tell me which candidate you would vote for: / *Katika tukio ifuatayo, Nitakupa picha ya wagombezi wawili wanaowania kiti kimoja cha kisiasa katika uchaguzi. Nataka uyasikie mambo wanaounga mkono na unieleze ni mgombezi yupi utakaye pigia kura* **Randomly select Version 1, Version 2, or Version 3 (33% / 33% / 33%)**

Version 1:

Candidate 1 pledges to create jobs and end corruption / *Mgombezi 1 Ana ahidi kuleta kazi, kumaliza ufasidi na kupunguza vifo vya watoto wachanga.*

Candidate 2 pledges to decrease the cost of living and build more roads in your local area. / *Mgombezi 2 Ana ahidi kupunguza gharama ya maisha na kujenga barabara katika eneo lako.*

Whom would you vote for? / *Ni nani ungepigia kura* **Single Answer. READ OUT.**

1. Candidate 1 / *Mgombezi 1*
2. Candidate 2 / *Mgombezi 2*

Version 2:

Candidate 1 pledges to create jobs, end corruption, and decrease child mortality. / *Mgombezi 1 Ana ahidi kuleta kazi, kumaliza ufasidi, na kupunguza uwindaji wa wanyama wa pori.*

Candidate 2 pledges to decrease the cost of living and build more roads in your local area. / *Mgombezi 2 Ana ahadi kupunguza garamah ya maisha na kunda barabara katika eneo lako unakotoka.*

Whom would you vote for? / *Ni nani ungepigia kura* **Single Answer. READ OUT.**



1. Candidate 1 / Mgombezi 1
2. Candidate 2 / Mgombezi 2

Version 3:

Candidate 1 pledges to create jobs, end corruption, and decrease tribalism. / Mgombezi 1 Ana ahidi kuleta kazi, kumaliza ufiada, na kupunguza ukabila.

Candidate 2 pledges to decrease the cost of living and build more roads in your local area. / Mgombezi 2 Ana ahadi kupunguza garamah ya maisha na kunda barabara katika eneo lako unakotoka.

Whom would you vote for? / Ni nani ungepigia kura **Single Answer. READ OUT.**

1. Candidate 1 / Mgombezi 1
2. Candidate 2 / Mgombezi 2

H7a. Are you aware of any development related Campaigns for the First Lady Margaret Kenyatta? / Je unajua kampeini yoyote ya maendeleo ya mama wa taifa Margaret Kenyatta? **Single Answer. READ OUT.**

1. Yes / Ndiyo > Go to H7b
2. No / La > Skip to H8

888. Do Not Read: Don't Know / Sijui > Skip to H8

999. Do Not Read: Refuse to Answer / Amekataa kujibu > Skip to H8

H7b. If YES, which Campaigns are you aware of? / Ikiwa NDIYO, ni kampeini gani unajua? **Multiple Answers FULL VERBATIMS**

- a) Open ended response

H8. Which of the following statements is true about Margaret Kenyatta's "Beyond Zero Campaign" / Ni ipi kati ya sentensi zifuatazo ni ya kweli kuhusu "Beyond Zero Campaign" ya Margaret Kenyatta? **Single Answer READ OUT**

1. I am not familiar with this campaign / Sina ufahamu wa kampeni hii
2. It is a campaign to stop government corruption / Ni kampeini ya kumaliza ufiada kwa serikali
3. It is a campaign to prevent maternal and child mortality / Ni kampeini ya kuzuia vifo vya wakati wa kuzaa na vifo vya watoto wanapozaliwa
4. It is a campaign to stop violence / Ni kampeni ya maliza vurugu

999. Do Not Read: Refuse to Answer / Amekataa kujibu

H9. How would you rate the overall performance of President Uhuru Kenyatta? / Je unaweza kupima aje utendaji kazi wa rais Uhuru Kenyatta kwa ujumla? **Single Answer. READ OUT.**

1. Excellent / Nzuri zaidi
2. Good / Nzuri



- 3. Just Fair / Wastani
- 4. Poor / Mbaya
- 888.Don't Know / Sijui
- 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

H10. How would you rate the overall performance of your local Governor? / Je unaweza kupima aje utendaji kazi wa Governor wa eneo lako unaloishi kwa ujumla? **Single Answer. READ OUT.**

- 1. Excellent / Nzuri zaidi
- 2. Good / Nzuri
- 3. Just Fair / Wastani
- 4. Poor / Mbaya
- 888.Don't Know / Sijui
- 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

H11. How would you rate the overall performance of your local MP? / Je unaweza kupima aje utendaji kazi wa mbunge wa eneo lako unaloishi kwa ujumla? **Single Answer. READ OUT.**

- 1. Excellent / Nzuri zaidi
- 2. Good / Nzuri
- 3. Just Fair / Wastani
- 4. Poor / Mbaya
- 888.Don't Know / Sijui
- 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

H12. How would you rate the overall performance of your local Senator? / Je unaweza kupima aje utendaji kazi wa Seneta wa eneo lako unaloishi kwa ujumla? **Single Answer. READ OUT.**

- 1. Excellent / Nzuri zaidi
- 2. Good / Nzuri
- 3. Just Fair / Wastani
- 4. Poor / Mbaya
- 888.Don't Know / Sijui
- 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

H13. How would you rate the overall performance of your local Woman Representative? / Je unaweza kupima aje utendaji kazi wa wakilisha wa akina mama katika bunge wa eneo lako unaloishi kwa ujumla? **Single Answer. READ OUT.**

- 1. Excellent / Nzuri zaidi
- 2. Good / Nzuri
- 3. Just Fair / Wastani
- 4. Poor / Mbaya
- 888.Don't Know / Sijui
- 999.DO NOT READ: Refuse to Answer / Amekataa kujibu

H14a. Do you feel close to any particular political party? / Je wajihisi kuwa karibu na chama chochote cha kisiasa?

- 1. Yes / Ndiyo > Continue to H14b
- 2. No / La > Skip to DEM1



H14b. Which political party? / Je ni chama kipi cha kisiasa?

1. AP
2. APK
3. ARK
4. CCM
5. CCU
6. CP
7. DP
8. FORD-ASILI
9. FORD-KENYA
10. FORD-P
11. FP
12. FPK
13. GNU
14. KANU
15. KAU-ASIL
16. KENDA
17. KNC
18. KSC
19. LPK
20. MDP
21. MGPK
22. MP
23. MSM
24. MSS
25. NAPK
26. NARC
27. NARC-K
28. ND
29. NDM
30. NFK
31. NLP
32. NPK
33. NVP
34. ODM
35. PDP
36. PDU
37. PICK
38. PNU
39. POA
40. PPK
41. PPPK
42. RBK
43. RC
44. RLP
45. SAFINA
46. SDP
47. 77
48. SPK
49. SSP
50. TIP
51. TNA
52. TRP
53. UDFP
54. UDM
55. UPK
56. URP



57. WDM-K
 58. Other: / [Nyingine](#) _____
 999. Refuse to Answer / [Amekataa kujibu](#)

SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

DEM1. What is your marital status? Are you....? [Ni nini hali yako ya ndoa... ume...?](#) [Tick as appropriate] **Single Answer**

- | | |
|--|---|
| <input type="checkbox"/> 1. Married / Owa / Olewa | <input type="checkbox"/> 4. Divorced / Talakiana |
| <input type="checkbox"/> 2. Single / Mhuni / Hujaolewa | <input type="checkbox"/> 5. Widowed / Mjane |
| <input type="checkbox"/> 3. Separated / Tengana | <input type="checkbox"/> 6. No response / Hakuna jibu |

DEM2. What is the highest level of school you have [completed](#)? / [Ni kiwango kipi cha juu cha elimu umehitimu](#) [Tick as appropriate] **Single Answer**

- | | |
|--|---|
| <input type="checkbox"/> 1. None / Hakuna | <input type="checkbox"/> 4. Secondary / Shule ya upili |
| <input type="checkbox"/> 2. Some primary school –but incomplete / Shule ya msingi kiasi lakini - sijakamilisha | <input type="checkbox"/> 5. University/College/Tertiary / Chuo kuu / chuo |
| <input type="checkbox"/> 3. Primary – complete / Shule ya msingi - nimekamilisha | <input type="checkbox"/> 6. No response / Hakuna jibu |

DEM3. What is your employment status....? / [Ni nini hali yako ya ajira....?](#) [Tick as appropriate] **Single Answer**

- | | |
|---|---|
| <input type="checkbox"/> 1. Not employed / Sijaariwa | <input type="checkbox"/> 4. Informal employment – Small Business / Ajira isiyo rasmi - biashara ndogo |
| <input type="checkbox"/> 2. Formal Employment / Ajira isiyo rasmi - biashara ndogo | <input type="checkbox"/> 5. Other informal employment (specify) / Ajira zingine zisizo rasmi |
| <input type="checkbox"/> 3. Informal employment – Farming / Ajira isiyo rasmi - ukulima | <input type="checkbox"/> 6. Other (specify) / Nyingine (Eleza) |

DEM4. I will show you a card that has different categories of income {**USE SHOWCARD**}. Please tell me only [the letter](#) that is written near your income category. We are interested in the [combined income of all members](#) of your household [after tax \(where applicable\)](#). / [Nitakuonyesha kadi iliyo na vitengo tofauti vya mapato \(TUMIA KADI\) tafadhali nieleze herufi iliyoambatana na kiwango cha mapato yako. Tunazingatia kwa ujumla mapato ya wakaaji wote wa Nyumba yako bada ya kutozwa ushuru\(ikiwa ipo\)](#)



- | | | | |
|--------------------------|--|--------------------------|--|
| <input type="checkbox"/> | 1. Up to 19,000 Ksh per month / Hadi shilingi 19,000 kwa mwezi | <input type="checkbox"/> | 5. 120,000 – 159,000 per month / Shilingi 120,000 hadi 159,000 kwa mwezi |
| <input type="checkbox"/> | 2. 20,000 - 39,000 per month / Shilingi 20,000 hadi 39,000 kwa mwezi | <input type="checkbox"/> | 6. 160,000 and above per month / Shilingi 160,000 na zaidi kwa mwezi |
| <input type="checkbox"/> | 3. 40,000- 79,000 per month / Shilingi 40,000 hadi 79,000 kwa mwezi | <input type="checkbox"/> | 888. Do not know / Sijui |
| <input type="checkbox"/> | 4. 80,000 – 119,000 per month / Shilingi 80,000 hadi 119,000 kwa mwezi | <input type="checkbox"/> | 999. Do Not Read: Refuse to Answer / Amekataa kujibu |

DEM 5. Does your household have: / Je nyumba yako ina (Mark all that apply) (Yes or No)

1. Electricity / Stima / Umeme
2. A radio / Redio
3. A television / Runinga
4. A mobile telephone / Rununu / simu ya mkononi
5. A non-mobile telephone / Simu isiyo ya rununu / isiyo ya mkononi
6. A refrigerator / Jokovu

DEM 6. During the last 3 months, were you worried that your household would run out of food because of a lack of money or other resources to get food? / Katika muda wa mwezi 3 zilizopita uliwahi sikitika kuwa nyumba yako itakuwa na upungufu wa chakula kwa sababu ya ukosefu wa pesa au vifaa vingine vya kupata chakula? **Single Answer. READ OUT.**

1. Yes/ Ndiyo
 2. No/ La
999. DO NOT READ: Refuse to Answer / Amekataa kujibu

DEM7. Language of Interview / Lugha ya mahojiano

1. English / Kingereza
2. Swahili / Swahili



Sampling Strategy

- Provinces: Western Province and Nyanza Provinces
- Counties:
 - Western: Vihiga, Kakamega, Busia, and Bungoma –
 - Nyanza: Kisumu, Siaya, Nyando, and Homa Bay
- Sample Size: 1,000
- Target Respondents: Parents of children under the age of 5

Appendix J

2015 Survey Instrument: Survey of Kenyan Dispensary Workers

Below is the survey instrument that was used in my 2015 survey of Kenyan dispensary workers. The survey itself was conducted using smartphone technology, not pen and paper. Instructions in **BOLD** were either for the programmers of the smartphone app or the enumerators.



Survey: Preventing Child Mortality: What obstacles do dispensaries face in supplying essential medicines to children in western Kenya?

County Name: **Single Answer**

1. Vihiga
2. Kakamega
3. Busia
4. Bungoma
5. Kisumu
6. Siaya
7. Migori
8. Homa Bay

2) Constituency Name: **(Open Ended)**

3) Sublocation Name: **(Open Ended)**

4) Dispensary Name: **(Open Response)**

5) Is the nearby locality urban or rural? **(Single Answer)**

1. Urban
2. Rural

6) Please estimate the overall wealth of the nearby locality **(Single Answer)**

1. Very wealthy
2. Wealthy
3. Neither wealthy nor poor
4. Poor
5. Very poor

7) Is the nearby locality mostly commercial (surrounded by other businesses) or mostly residential (surrounded by homes)? **(Single Answer)**

1. Commercial
2. Residential

8) At what time did you arrive at the dispensary? **(Single Answer)**

1. 8:00-9:00
2. 9:00-10:00
3. 10:00-11:00
4. 11:00-12:00
5. 12:00-1:00
6. 1:00-2:00
7. 2:00-3:00
8. 3:00-4:00
9. 4:00-5:00



- 9) When you arrived, was the dispensary open?
1. Yes -> **Continue to question 10**
 2. No -> **If it is past 9am, terminate interview. If it is before 9am, wait until 9am.**
- 10) When you arrive at the dispensary, use the smartphone to geotag the location.
- 11) Are the dispensary's operating hours listed where the public can see them?
1. Yes
 2. No
- 12) How many days per week is the dispensary open? **Note: If hours are not posted, ask a dispensary employee. (Numeric Response: 0-7)**
- 13) What is the number of hours that the dispensary is open on an average day? **Note: If hours are not posted, ask a dispensary employee. (Numeric Response: 0-24)**
- 14) How many dispensary workers are at the dispensary at this very moment? **(Numeric Response: 0-99)**
- 15) How many patients were waiting in the queue at the dispensary when you first arrived? **(Numeric Response: 0-99)**
- 16) Politely ask the patient at the front of the queue how long they had been waiting for service. How long had they been waiting? **(Numeric Response in Minutes; 0-999)**

INTRODUCTION

Hello, my name is _____ from Ipsos Limited. You are being asked to participate in a research project for academic study from the University of California, San Diego.

Purpose of the Study:

The purpose of this research study is to find out more about the attitudes and behaviors of Kenyans regarding child health, and the role of the government in child health. You have been asked to participate in this study because you are a health worker in a local dispensary.

What will happen in this research study:

If you decide to participate, you will complete a survey of about 45-60 minutes. Your responses to the survey will be recorded anonymously – your name will not be used at all. Participation in research is entirely voluntary. You are free to answer every question, or skip questions as you please.



You may call the UCSD Human Research Protections Program Office at 1-858-657-5100 to inquire about your rights as a research subject or to report research-related problems. I will give you more information on the study and the name and number of the researcher at Ipsos Limited who you can contact if you have any questions or concerns.

By completing the survey you agree to participate.

17) Age **(Single Answer. Read Out.) (Must be 18 and above)**

1. 18-25
2. 26-35
3. 36-45
4. 46-55
5. 56+

18) What is your job title at this dispensary? **(Open ended response)**

19) Are you main decision-maker or part of the decision-making at this dispensary? **Single Answer.**

1. Main decision-maker -> **Continue to question 20**
2. Part of the decision-making -> **Continue to question 20**
3. Neither -> **Ask to survey whoever is said person. If no person who is part of decision-making is available, terminate interview.**

20) In your opinion, how severe is the issue of childhood diarrhea (passing watery stools) in Kenya?

Single Answer. READ OUT

1. It is not a problem
2. It is a minor problem
3. It is a serious problem
4. **DO NOT READ: Don't Know**
5. **DO NOT READ: Refuse to Answer**

21) I will now read out a list of possible treatments for a child under 5 years who has diarrhea.

Which do you believe is the gold standard of treatment? **Randomize Response Options. Single Answer. Read Out.**

1. No Treatment
2. Oral Rehydration Solution (ORS)
3. Homemade Sugar and Salt Solution (SSS)
4. Anti Diarrheal Drug
5. Antibiotics



6. Give the child no or very little food or liquid
7. Increase food and liquids
8. Herbal Medication
9. Other(Specify):

10. DO NOT READ: Don't Know

11. DO NOT READ: Refuse to Answer

22) When a child (under 5) has diarrhea, how often do you prescribe anti-diarrheal medication, assuming it is available in your dispensary? **SINGLE ANSWER. READ OUT.**

1. Never -> **SKIP TO QUESTION 24**
2. Less than half of the time -> **CONTINUE TO QUESTION 23**
3. About half of the time -> **CONTINUE TO QUESTION 23**
4. More than half of the time -> **CONTINUE TO QUESTION 23**
5. Every time -> **CONTINUE TO QUESTION 23**
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

23) What are the reasons that you would choose to prescribe anti-diarrheal medication to a child under the age of five? **CHECK ALL THAT APPLY. READ OUT.**

1. It is the best treatment for diarrhea in children
2. If the parents request it
3. If a different health provider had already recommended it to the child
4. If the diarrhea is bloody
5. If the diarrhea is occurring many times per day
6. Other: _____
7. **DO NOT READ: Don't Know**
8. **DO NOT READ: Refuse to Answer**

24) Now thinking about antibiotics, when a child (under 5) has diarrhea, how often do you prescribe antibiotics, assuming it is available in your dispensary? **SINGLE ANSWER. READ OUT.**

1. Never -> **SKIP TO QUESTION 26**
2. Less than half of the time -> **CONTINUE TO QUESTION 25**
3. About half of the time -> **CONTINUE TO QUESTION 25**
4. More than half of the time -> **CONTINUE TO QUESTION 25**
5. Every time -> **CONTINUE TO QUESTION 25**
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

25) What are the reasons that you would choose to prescribe antibiotics to a child under the age of five with diarrhea? **CHECK ALL THAT APPLY. READ OUT.**

1. It is the best treatment for diarrhea in children



2. If the parents request it
3. If a different health provider had already recommended it to the child
4. If the diarrhea is bloody
5. If the diarrhea is occurring many times per day
6. Other: _____
7. **DO NOT READ:** Don't Know
8. **DO NOT READ:** Refuse to Answer

26) Now thinking **about Oral Rehydration Solution (ORS)**, when a child (under 5) is ill with diarrhea, how often do you prescribe ORS, assuming it is available in your dispensary? **SINGLE ANSWER. READ OUT.**

1. Never -> **CONTINUE TO QUESTION 27**
2. Less than half of the time -> **CONTINUE TO QUESTION 28**
3. About half of the time -> **CONTINUE TO QUESTION 28**
4. More than half of the time -> **CONTINUE TO QUESTION 28**
5. Every time -> **SKIP TO QUESTION 28**
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer

27) What are the reasons that you would **refuse** to prescribe **ORS** to a child under the age of five with diarrhea? **CHECK ALL THAT APPLY. READ OUT.**

1. ORS is not an effective treatment for diarrhea
2. If no blood is present in the diarrhea
3. If the parents refuse to accept it
4. If the diarrhea is occurring less than 5 times per day
5. Other: _____
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer

28) In your opinion, what are this dispensary's biggest challenges to preventing childhood death from diarrhea? Choose a first response, second response, and third response. **USE SHOWCARD**

1. Lack of ORS in this dispensary
2. Lack of anti-diarrheal medication in this dispensary
3. Lack of antibiotics in this dispensary
4. The road infrastructure is too poor for families to access the dispensary
5. Dispensary is too far for families to access
6. Not enough staff at this dispensary
7. Parents do not believe that diarrhea requires treatment
8. Parents refuse treatment that has been prescribed by dispensary
9. Other: _____
10. No Response



29) When your dispensary orders more medication, how confident are you that you will receive the amount you requested? **Single Answer. READ OUT**

1. Very Confident
2. Somewhat Confident
3. Somewhat Doubtful
4. Very Doubtful
5. **DO NOT READ: Don't Know**
6. **DO NOT READ: Refuse to Answer**

30) When your dispensary orders more ORS, how much of what you order do you usually receive?

Single Answer. READ OUT

1. Nothing -> **CONTINUE TO QUESTION 31**
2. Less than half -> **CONTINUE TO QUESTION 31**
3. About half -> **CONTINUE TO QUESTION 31**
4. More than half -> **CONTINUE TO QUESTION 31**
5. Full amount -> **SKIP TO QUESTION 32**
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

31) Have you (your dispensary) ever ordered more ORS than needed because you expected you would not receive the full amount? **Single Answer.**

1. Yes
2. No

32) Dispensaries do not always have access to every treatment for diarrhea. Which of the following do you most frequently prescribe for children (under 5) who are experiencing diarrhea? **Single Answer. USE SHOWCARD.**

1. No Treatment
2. Oral Rehydration Solution (ORS)
3. Homemade Sugar and Salt Solution (SSS)
4. Anti Diarrheal Drug
5. Antibiotics
6. Give the child no or very little food or liquid
7. Increase food and liquids
8. Herbal Medication
9. Other(Specify):

10.DO NOT READ: Don't Know

11.DO NOT READ: Refuse to Answer



- 33) In your opinion, how much corruption exists in the procurement of medication at the national level in Kenya? **Single Answer. READ OUT**
1. No Corruption
 2. Little Corruption
 3. Some Corruption
 4. A Lot of Corruption
 5. **DO NOT READ:** Don't Know
 6. **DO NOT READ:** Refuse to Answer
- 34) Now thinking at the **county level**, how much corruption do you believe exists in the procurement of medication at the county level? **Single Answer. READ OUT**
1. No Corruption
 2. Little Corruption
 3. Some Corruption
 4. A Lot of Corruption
 5. **DO NOT READ:** Don't Know
 6. **DO NOT READ:** Refuse to Answer
- 35) Does the Ministry of Health have a formula to use to determine exactly how much ORS to order at each dispensary? **Single Answer**
1. Yes -> **Continue to question 36**
 2. No -> **Skip to question 37**
- 36) What formula does the Ministry of Health recommend when dispensaries order more ORS **(Open Ended Response. One Mention)**
- 37) Why have stock-outs of ORS occurred in dispensaries in Kenya? **(Open Ended Response. Up to 3 mentions)**
- 38) Who do patients believe is to blame when stock-outs of medications occur? **Single Answer. READ OUT.**
1. The dispensary -> **Skip to question 40**
 2. The government -> **Continue to question 39**
 3. Other: _____ -> **Skip to question 40**
 4. **DO NOT READ:** Don't Know -> **Skip to question 40**
 5. **DO NOT READ:** Refuse to Answer -> **Skip to question 40**
- 39) Which level of government do they blame the most? **Single Answer. READ OUT**
1. Ward Representative
 2. County Government
 3. National Government
 4. All Equally



40) What proportion of the past 12 months has your dispensary been out of stock of ORS? **Single Answer. READ OUT**

1. All of the past 12 months
2. More than half of the past 12 months
3. About half of the past 12 months
4. Less than half of the past 12 months
5. None of the past 12 months
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

41) **(ONLY ASK IF RESPONDENT ANSWERED 3, 4, or 5 IN QUESTION 26)** When your dispensary is out of stock of ORS, what do you primarily prescribe for children with diarrhea? **Single Answer. READ OUT**

1. Anti-diarrheal medications
2. Antibiotics
3. Homemade sugar and salt solution
4. Nothing
5. **DO NOT READ: Don't Know**
6. **DO NOT READ: Refuse to Answer**

42) What proportion of the past 12 months has your dispensary been out of stock of malaria drugs? **Single Answer. READ OUT**

1. All of the past 12 months
2. More than half of the past 12 months
3. About half of the past 12 months
4. Less than half of the past 12 months
5. None of the past 12 months
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

43) What proportion of the past 12 months has your dispensary been out of stock of aspirin? **Single Answer. READ OUT**

1. All of the past 12 months
2. More than half of the past 12 months
3. About half of the past 12 months
4. Less than half of the past 12 months
5. None of the past 12 months
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

44) What proportion of the essential medicines do you currently have in stock? **Single Answer. READ OUT. Provide handout of list of Essential Medicines.**

1. No essential medicines are in stock



2. Less than half of the essential medicines are in stock
3. About half of the essential medicines are in stock
4. More than half of the essential medicines are in stock
5. All of the essential medicines are in stock
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer

45) Would you say that the supply of essential medicines has improved, stayed the same, or gotten worse over the past two years? **Single Answer**

1. Improved
2. Stayed the same
3. Gotten Worse
4. **DO NOT READ: Don't Know**
5. **DO NOT READ: Refuse to Answer**

46) How many times in the past 12 months has this dispensary been inspected by the Ministry of Health? **(Numeric Response: 0-99)**

47) How many sachets of ORS do you currently have in stock? **(Numeric Response: 0-999)**

1. **If greater than 0, continue to question 48**
2. **If 0, skip to question 49**

48) May I please see a sachet of ORS? **Survey Team: Politely ask to see one of the ORS sachets and take a photo.**

1. Photo Taken
2. Photo Not Taken

49) How many tablets of zinc do you currently have in stock? **(Numeric Response: 0-999)**

50) How many health workers in Kenya do you think have sold any medicines at least one time to increase their personal income? Interviewer note: Assure the respondent that this is not in reference to their dispensary or to the health facilities in this ward). **Single Answer. READ OUT.**

1. It never occurs
2. A small amount of health workers in Kenya have done this at least once
3. About half of the health workers in Kenya have done this at least once
4. Most health workers in Kenya have done this at least once
5. Every health worker in Kenya has done this at least once
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer



51) **Single Answer. 50/50 Randomization. Separate Show Card for VERSION 1 and VERSION 2(not numbered or lettered).**

VERSION 1

I will read a list of 3 activities that you may have personally engaged in. Among the 3 options, how many have you engaged in personally at least once. We do not want to know which ones, just how many.

- Assisted in the birth of a child
- Attended a conference for health workers in Nairobi
- Received medical training in the United States

1. 1
2. 2
3. 3
4. **DO NOT READ:** Don't Know
5. **DO NOT READ:** Refuse to Answer
6. None

VERSION 2

I will read a list of 4 activities that you may have personally engaged in. Among the 4 options, how many have you engaged in personally at least once. We do not want to know which ones, just how many.

- Assisted in the birth of a child
- Attended a conference for health workers in Nairobi
- Received medical training in the United States
- Sold medication for personal profit

1. 1
2. 2
3. 3
4. 4
5. **DO NOT READ:** Don't Know
6. **DO NOT READ:** Refuse to Answer
7. None

D: Demand from Constituents

52) When a child under 5 is ill with diarrhea, how likely are parents to use ORS when it is offered to them? **Single Answer. USE SHOWCARD**

1. Very likely
2. Somewhat likely



3. Somewhat Unlikely
4. Very unlikely
5. **DO NOT READ:** Don't Know
6. **DO NOT READ:** Refuse to Answer

53) Are parents more likely, equally as likely, or less likely to use ORS when it is offered to them compared to 2 years ago?

1. More likely
2. Equally as likely
3. Less likely
4. **DO NOT READ:** Don't Know
5. **DO NOT READ:** Refuse to Answer

54) When you see patients (under 5) who are suffering from diarrhea, how many of these children have already been seen by a Community Health Worker for that condition? **Single Answer.**

READ OUT

1. None
2. Very few
3. Approximately half
4. Most
5. All of them
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer

55) When a child under 5 is ill with diarrhea, how frequently do parents request anti-diarrheal drugs to stop their children's symptoms? **Single Answer. READ OUT**

1. Never
2. Rarely
3. Some of the times
4. Frequently
5. Every time
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer

56) Now thinking about antibiotics, when a child under 5 is ill with diarrhea, how frequently do parents request antibiotics to stop their children's symptoms? **Single Answer. READ OUT**

1. Never
2. Rarely
3. Some of the times
4. Frequently
5. Every time
6. **DO NOT READ:** Don't Know
7. **DO NOT READ:** Refuse to Answer

57) In the past 5 years, which of the following have held an educational training session about diarrheal diseases for parents in this locality? **(Select all that apply)**



1. Local Government
2. National Government
3. Local NGO: _____
4. International NGO: _____
5. None
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

58) Please evaluate the current government's performance on the following services from 1 to 5.

USE SHOWCARD

1. Very Poor
2. Poor
3. Neither Poor nor Good
4. Good
5. Very Good
6. **DO NOT READ: Don't Know**
7. **DO NOT READ: Refuse to Answer**

- Providing medicines for this dispensary
- Providing salaries for this dispensary's workers
- Maintaining the infrastructure of this dispensary
- Providing supplies other than medicine for this dispensary

59) **ONLY ASK IF A SCORE OF 1 or 2 WAS GIVEN FOR ANY OF THE OPTIONS IN QUESTION 58. SKIP IF A SCORE OF 3, 4, or 5 WAS GIVEN FOR ALL 4 SERVICES.** What could the government do to improve this dispensary? (**open ended question. Up to three mentions**)

60) Which of the following government officials have you personally met? (**Select all that apply**)

1. Ward Representative (MCA) for this specific ward
2. Governor
3. Member of Parliament
4. Women's Rep
5. Senator
6. President
7. None
8. **DO NOT READ: Don't Know**
9. **DO NOT READ: Refuse to Answer**

61) Which of the following government officials have visited this ward? (**Select all that apply. For each selection, ask question 62**)

1. Ward Representative (MCA) for this specific ward



2. Governor
3. Member of Parliament
4. Women's Rep
5. Senator
6. President
7. None
8. **DO NOT READ: Don't Know**
9. **DO NOT READ: Refuse to Answer**

62) How many times has the **(answer from question 61)** visited this ward in the past 12 months?
(Numeric Response: 0-99) *Put 99 if they live in ward.

63) Which of the following government officials have given services (funding, medicines, supplies, staff) directly to this dispensary? **(Select all that apply. For each selection, ask question 64)**

1. Ward Representative (MCA) for this specific ward
2. Governor
3. Member of Parliament
4. Women's Rep
5. Senator
6. President
7. None
8. Other: _____
9. **DO NOT READ: Don't Know**
10. **DO NOT READ: Refuse to Answer**

64) What services did the **(answer from question 63)** provide to this dispensary? **(Open Ended Response. Up to 3 mentions)**

65) Did any politicians assist in getting you hired to this dispensary? **(Single Answer)**

1. Yes -> **CONTINUE TO QUESTION 66**
2. No -> **SKIP TO QUESTION 67**

66) Which of the following government officials assisted in getting you hired at this dispensary?
(Select all that apply)

1. Ward Representative (MCA) for this specific ward
2. Governor
3. Member of Parliament
4. Women's Rep
5. Senator
6. President
7. None
8. Other: _____



9. **DO NOT READ: Don't Know**
10. **DO NOT READ: Refuse to Answer**

67) If you had a problem at this dispensary, which of the following government officials would you ask for help? **(Select all that apply)**

1. Ward Representative (MCA)
2. Governor
3. Member of Parliament
4. Women's Rep
5. Senator
6. President
7. None
8. Other: _____
9. **DO NOT READ: Don't Know**
10. **DO NOT READ: Refuse to Answer**

68) Which of the following government officials do you believe is most dedicated to improving the health sector? Pick a first choice (1), a second choice (2), and a third choice (3)

1. Ward Representative (MCA)
2. Governor
3. Member of Parliament
4. Women's Rep
5. Senator
6. President
7. None
8. **DO NOT READ: Don't Know**
9. **DO NOT READ: Refuse to Answer**

69) I will now list 6 services that an MCA could provide for his or her locality, Which three do you think your MCA would likely provide if he or she received more funding for health? Choose a first choice (1), second choice (2), and third choice (3) **(USE SHOWCARD)**

1. Buying medicines for existing dispensaries
2. Building new dispensaries
3. Upgrading the nearest level 4 hospital to level 5
4. Purchasing new diagnostic machines (such as an X-Ray machine) for the nearest level 4 hospital
5. Hiring more health workers at existing dispensaries
6. Paying a stipend to Community Health Workers
7. Other: _____
8. None
9. **DO NOT READ: Don't Know**
10. **DO NOT READ: Refuse to Answer**



70) If your local MCA received more funding to spend on local healthcare, which services would you like them to provide? Choose your first preference (1), second preference (2), and third preference (3) **(USE SHOWCARD)**

1. Buying medicines for existing dispensaries
2. Building new dispensaries
3. Upgrading the nearest level 4 hospital to level 5
4. Purchasing new diagnostic machines (such as an X-Ray machine) for the nearest level 4 hospital
5. Hiring more health workers at existing dispensaries
6. Paying a stipend to Community Health Workers
7. Other: _____
8. None
9. **DO NOT READ: Don't Know**
10. **DO NOT READ: Refuse to Answer**

71) Have you missed your salary any times in the past one year (12 months)? **Single Answer**

1. **Yes -> Continue to Questions 72 and 73**
2. **No -> Skip to Question 74**

72) How many months over the past year (12 months) did you miss your salary? **(Numeric response: 1-12)**

73) What was the longest stretch of consecutive months that you missed your salary in the past year (12 months)? **(Numeric response: 1-12)**

74) Gender

1. Male
2. Female

75) Marital Status

1. Married
2. Single
3. Separated
4. Divorced
5. Widowed
6. No Response

76) Do you have children?

1. Yes
2. No
3. **DO NOT READ: Refuse to Answer**

77) How many years have you been employed in the health sector? **(Numeric: 0-99)**

78) How many years have you been employed at this dispensary? **(Numeric: 0-99)**



79) Do you live in this sublocation?

1. Yes -> **continue to QUESTION 80**
2. No -> **Skip to QUESTION 81**

80) How many years have you lived in this sublocation? **(Numeric Response: 0-99) SKIP TO QUESTION 83**

81) How many minutes away is the sublocation in which you live? **(Numeric Response: 0-999)**

82) How many years have you lived in that sublocation? **(Numeric Response: 0-99)**

83) What is the highest level of school that you have completed? **(Single Answer. READ OUT)**

1. None
2. Some primary school – but incomplete
3. Primary school – complete
4. Secondary
5. University/College/Tertiary
6. No Response

84) I will show you a card that has different categories of gross salary **(USE SHOWCARD)** Please tell me only the number that is written near your salary category. We are interested in your gross salary at this job only, not your combined household income.

1. Up to 20,000 ksh per month
2. 20,001 – 40,000 ksh per month
3. 40,001 – 80,000 ksh per month
4. 80,001 – 120,000 ksh per month
5. 120,001 – 160,000 ksh per month
6. 160,001 ksh per month and above
7. Do Not Know
8. **DO NOT READ:** Refuse to Answer

85) Have you received any additional training on treating childhood diarrhea since you began working at this dispensary?

1. Yes -> **Continue to questions 86 and 87**
2. No -> **Skip to question 88**

86) How many years ago did that training occur? **Round to the next highest year. (Numeric Response: 0-99)**

87) Who gave the training? **Select all that apply.**

1. Kenyan Government
2. International Health Organization
3. Local Health Organization



4. Other: _____
5. **DO NOT READ: Don't Know**
6. **DO NOT READ: Refuse to Answer**

88) Have you ever placed an order for more medicines for this dispensary? **Single Answer.**

1. Yes
2. No

89) Please estimate how many years this dispensary has been open. **(Numeric 0-99)**

90) How many people live in this dispensary's catchment area?

1. Up to 1,000
2. 1,001 – 5,000
3. 5,001 – 10,000
4. 10,001 – 20,000
5. 20,001 – 30,000
6. 30,001 and above
7. **DO NOT READ: Don't Know**
8. **DO NOT READ: Refuse to Answer**

91) The following is a sensitive question. We assure you that this information will not be shared with anyone, and that the researcher is only looking to understand what practices occur across Kenya: Which of the following practices have you personally done? **(Select all that apply – yes, no, or refuse to answer for each. Randomize Response Option Order)**

1. Sold medication for personal profit
2. Accepted payment from a patient for personal profit
3. Missed a full day of work unannounced
4. Distributed expired medication

92) Ethnicity: **(Single Answer).**

1. Kamba
2. Luhya
3. Somali
4. Kalenjin
5. Kikuyu
6. Luo
7. Maasai
8. Embu
9. Kisii
10. Samburu
11. Mbeere
12. Meru
13. Taita
14. Teso



15. Tharaka
16. Turkana
17. Mijikenda
18. Taveta
19. Borana
20. Rendille
21. Orma
22. Thagicu
23. Arab
24. Swahili
25. Bajuni
26. Kenyan only
27. Other: _____
28. Mixed
29. No Response / Refused to Answer

93) Who do you believe sent us to conduct this survey? **Single Answer**

1. This was a survey for academic research; conducted by Ipsos
2. The Ministry of Health
3. A Politician: _____ (give title)
4. An non governmental organization: _____ (give title)
5. An international organization: _____ (give title)
6. Other: _____
7. **DO NOT READ:** Don't Know
8. **DO NOT READ:** Refuse to Answer

94) How many minutes away is the nearest tarmac/paved road? **(Numeric Response: 0-999)**

Interviewers Details

95) Interviewer Gender

1. Male
2. Female

96) Interviewer Age: **(Numeric Response: 0-99)**

97) Interviewer Ethnicity

1. Kamba
2. Luhya
3. Somali
4. Kalenjin
5. Kikuyu
6. Luo
7. Maasai
8. Embu
9. Kisii
10. Samburu



11. Mbeere
12. Meru
13. Taita
14. Teso
15. Tharaka
16. Turkana
17. Mijikenda
18. Taveta
19. Borana
20. Rendille
21. Orma
22. Thagicu
23. Arab
24. Swahili
25. Bajuni
26. Kenyan only
27. Other: _____
28. Mixed
29. No Response / Refused to Answer

Appendix K

Selected Essential Medicines List

Below is the handout that enumerators gave to every respondent of the 2015 Dispensary survey. The handout lists the essential medicines that every Kenyan health facility is required to have on hand at all times. Respondents were encouraged to look over the handout and let the enumerator know what proportion of the essential medicines they currently had in stock.

Selected Essential Medicines**Specific Medicines for Neonatal care**

- Caffeine Citrate

Ear and Oropharyngeal Medicines

- Acetic Acid
- Polyvidone Iodine

Vitamins and Minerals

- Calcium Gluconate
- Ergocalciferol
- Nicotinamide
- Retinol
- Thiamine (Vit B)

Solutions Correcting Water, Electrolyte and Acid-Base Disturbances

- Oral Rehydration Solution
- Potassium Chloride
- Glucose
- Potassium Chloride
- Sodium Chloride
- Sodium Hydrogen Carbonate
- Sodium Lactate Compound

Medicines Acting on the Respiratory Tract

- Beclomethasone
- Epinephrine
- Salbutamol

Psychotherapeutics

- Diazepam
- Chlorpromazine
- Fluphenazine
- Haloperidol
- Amitryptline
- Fluoxetine
- Carbamazepine
- Lithium Carbonate
- Calproic Acid

Oxytocics and Antioxytocics

- Oxytocin

Ophthalmologicals

- Gentamicin
- Tetracycline

- Prednisolone
- Tetracaine
- Acetazolamide
- Pilocarpine
- Timolol
- Atropine

Muscle Relaxants and Cholinesterase Inhibitors

- Neostigmine
- Suxamethonium
- Vecuronium

Immunologicals

- Tuberculin
- Anti-D immunoglobulin
- Antitetanus immunoglobulin
- Antirabies immunoglobulin
- Snake venom antiserum
- BCG Vaccine
- DPT Vaccine
- Measles Vaccine
- Meningococcal meningitis vaccine
- Pneumococcal vaccine
- Poliomyelitis vaccine

Hormones, Other endocrine medicines and contraceptives

- Fludrocortisone
- Hydrocortisone
- Prednisolone
- Ethinylestradiol
- Levonorgestrel
- Medroxy-progesterone acetate
- Norethisterone
- Copper T
- Female Condom
- Male Condom
- Etonogestrel
- Levonorgestrel
- Insulin
- Clomifene
- Carbimazole
- Levothyroxine

Gastrointestinal Medicines

- Magnesium
- Omeprazole

- Ranitidine
- Dexamethasone
- Metoclopramide
- Sulfasalazine
- Bisacodyl
- Oral Rehydration Solution (ORS)
- Zinc sulphate

Disinfectants and Antiseptics

- Chlorhexidine
- Ethanol
- Amiloride Hydrochlorothiazide
- Furosemide
- Mannitol

Dermatologicals

- Clotrimazole
- Betamethasone
- Calaine Hydrocortisone
- Dithranol
- Podophylin resin
- Salicylic Acid
- Benzyl Benzoate

Antithrombotic Medicines

- Aspirin

Cardiovascular

- Digoxin
- Enalapril
- Furosemide
- Atenolol
- Glyceryl Trinitrate
- Verapamil

Blood Products

- Dextran 70
- Ferrous sulphate
- Folic Acid
- Heparin
- Warfarin Sodium

Antiparkinsonism Medicine

- Benzhexol HCL

Antineoplastics, Immunosuppressives, and Palliative Care Medicines

- Azathioprine

- Ciclosporin

Antimigraine Medicines

- Aspirin
- Ibuprofen
- Paracetamol

Anti-Infectives

- Albendazole
- Praziquantel
- Ivermectin
- Amoxicillin
- Ampicillin
- Benzathine
- Ciprofloxacin
- Cotrimoxazole
- Doxycycline
- Erythromycin
- Gentamicin
- Metronidazole
- Dapsone
- Rifampicin
- Ethambutol

Antidotes and Other substances used in poisonings

- Activated Charcoal
- Acetylcysteine
- Atropine
- Deferoxamine

Antiallergics and Medicines used in

Anaphylaxis

- Chlorphenamine
- Dexamethasone
- Epinephrine
- Hydrocortisone
- Prednisolone
- Salbutamol

Anaesthetics

- Halothane
- Ketamine
- Oxygen

Appendix L

IRB Approval and Exemptions for Surveys and Interviews

Below are three letters from UCSD's Human Research Protections Program. The first is an exemption from IRB for the 2014 survey of Kenyan constituents. The second is IRB approval for the 2015 survey of dispensary workers. The third is an exemption from IRB to conduct interviews with Kenyan politicians.

140818XX



UNIVERSITY OF CALIFORNIA, SAN DIEGO
HUMAN RESEARCH PROTECTIONS PROGRAM

TO: Mr. Nathan Combes

RE: Project #140818XX
The Politics of Child Mortality from Diarrheal Disease in East Africa

Dear Dr. Combes:

Your project has been reviewed by an IRB Chair and/or the IRB Chair's designee and certified as exempt from IRB review under 45 CFR 46.101(b), category 2: Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

- a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
- b) Any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note: When a study has been certified as exempt from IRB review, continuing review and approval is not required. Certification of Exemption is effective for the life of the study. However, all modifications to a study that has been certified exempt must be submitted to the IRB for prospective review and certification of exemption prior to implementation. In some circumstances, changes to the protocol may disqualify the project from exempt status.

The research activities described in the application have been determined to meet the criteria for exemption from IRB review. The PI should ensure that the research activities are conducted to meet University of California, San Diego ethical standards.

A handwritten signature in black ink, appearing to read "KS", written over a white background.

/jd

Kevin "Casey" Cox
Acting Director
UCSD Human Research Protections Program
(858) 657-5100; hrpp@ucsd.edu

Release date: 7/24/2014

150378S



UNIVERSITY OF CALIFORNIA, SAN DIEGO
HUMAN RESEARCH PROTECTIONS PROGRAM

TO: Dr. Nathan Combes
RE: Project #150378S
Preventing Child Mortality: What obstacles do dispensaries face in supplying essential medicines to children in western Kenya?

Dear Dr. Combes:

The above-referenced project was reviewed and approved by one of this institution's Institutional Review Boards in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46 and 21 CFR 50 and 56), including its relevant Subparts. This approval, based on the degree of risk, is for 365 days from the date of **IRB review and approval** unless otherwise stated in this letter. The regulations require that continuing review be conducted on or before the 1-year anniversary date of the IRB approval, even though the research activity may not begin until some time after the IRB has given approval.

The use of oral consent has been granted for this project. The IRB under 45 CFR 46.117 (c)(1) waives the requirement for the PI to obtain a signed consent form because the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality.

The IRB determined that this project presents no more than minimal risk to human subjects in that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

Date of IRB review and approval: 3/4/2015

On behalf of the UCSD Institutional Review Boards,

A handwritten signature in black ink that reads "A magit".

/rl

Anthony Magit, M.D.
Director
UCSD Human Research Protections Program
(858) 657-5100; hrpp@ucsd.edu

150378S



UNIVERSITY OF CALIFORNIA, SAN DIEGO
HUMAN RESEARCH PROTECTIONS PROGRAM

Date: June 2, 2015
To: Dr. Nathan Combes
Re: Project #150378S
Preventing Child Mortality: What obstacles do dispensaries face in supplying essential medicines to children in western Kenya?

Dear Dr. Combes:

Our office is in receipt of your May 18, 2015 submission that requested clarification on whether interviewing politicians on the subject matter of fund allocations for the medicinal supplies in Kenya would constitute human research. Your submission stated that politicians will be asked for an interview, in which the questions you propose to ask are of their opinion, and directly related to the tasks assigned to them through their political appointment, and you will not be able to make general claims or predictions that "politicians' opinions are as such in *these given conditions*." Further your submission states that "the information collected can only be presented as the opinion of a select number of experts/practitioners and cannot be used as statistical research to generalize to politicians at large." Thank you for this submission.

Based on the information provided, the mere fact of speaking with politicians to ask their opinion on their level of involvement in the process of allocating funds for supplying medicines in Kenya does not constitute human research, as you are not seeking to create generalizable knowledge about politicians at large. Activities that collect information to explain past or current events, but not to create theories, principles, or statements of relationships that are predictive of future events or that can be widely applied would not be considered "generalizable knowledge."

Thank you for keeping the IRB informed.

On behalf of the UCSD Institutional Review Boards,

A handwritten signature in black ink that reads "A magit".

/rl

Anthony Magit, M.D.
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