

Social Franchising and the Efficiency of Sexual and Reproductive Health Care in India

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Abstract

Building business franchises to deliver basic services traditionally provided by the government—social franchising—is being explored by private and non-governmental actors to improve the dire state of child and maternal health in India. In 2000, a non-profit organization called Janani began bringing the private providers of sexual and reproductive health (SRH) services throughout India into a franchise network. Janani believed that social franchising of existing private SRH providers could increase the quality and efficiency of the services provided while keeping cost within reach of the poor. This paper uses a 2004 survey of 1,686 health facilities in India including both members and non-members of the Janani franchise to statistically assess the relationship between efficiency of health care provision and franchise membership. The results suggest that franchise facilities are more efficient at providing SRH services under certain circumstances. Specifically, additional doctors and/or clinical support staff are correlated with higher client throughput at franchise facilities than at non-franchised facilities. This increase in client throughput appears to occur without a hint of corresponding declines in the client perception of the quality of care. These results suggest that policies encouraging franchise membership are warranted in specific circumstances.

This thesis is dedicated to my fellow students, the staff and the professors at GPPI, to the endless support and guidance of Michael Clemens, the constant words of encouragement and patience of my wife Toni, and to my Little Bean, Lily, whose smiles remind me why I'm doing what I'm doing.

Thanks,
Adam

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Introduction:

By any measure the health status for most Indians remains dire. In India, the chance that any given child will die before age 5 and the chance that an expectant mother will die in childbirth are roughly ten times the corresponding chances in developed parts of North America and Europe. Over five million Indians are living with HIV/AIDS (Mukherji, 2). Improving this bleak picture is a priority for the Indian private sector, government and civil society, which are seeking innovative ways to improve the health system as a whole.

According to the United Nations Development Programme's Human Development Report 2007/2008, India's estimated combined public and private expenditures on health care in 2004 were 5% of GDP (249). While this level of expenditure is relatively equal to that of other developing nations, India's per capita expenditure is low and is expected to remain low for two reasons: the rising cost of health care and because of India's large and growing population (Mukherji, 1). If India is to become a place where children and women have a better chance of living healthy lives it will have to improve and increase its health care coverage at a time when health care demand and costs are also increasing.

Many of the health care interventions that have been implemented by governments and international organizations in developing countries have focused almost entirely on the public provision of health care. Frequently, the goal of these interventions has been to provide "universal access to services that meet virtually all health needs at little or no cost to the user. [Unfortunately], after decades of public programs, few lower

and middle-income countries have succeeded in meeting even modest interpretations of these goals” (Berman, 1463). Recognizing the low success rate of public interventions and the reality that, in India, 80 percent of health care services are provided by the private sector, there has been an increased interest in interventions that focus on utilizing private sector methods to improve health care delivery. Much of this interest has been driven by the successes of social marketing, one of the first private sector approaches utilized to fulfill social goals.

Social marketing was defined by Philip Kotler and Gerald Zaltman (5) in 1971 as “the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution, and marketing research.” Since that time, social marketing campaigns have been implemented to address a wide variety of social issues in developed countries ranging from smoking to skin cancer. Successes have also been seen in developing countries. The Joint United Nations Programme on HIV/AIDS (UNAIDS) states that “in the mid-1980s, condom social marketing emerged as an effective tool in combating the spread of HIV/AIDS” (UNAIDS, 2). Social marketing was also found to increase mosquito net usage in Tanzania where malaria is a constant problem (Kikumbih, 375). Due to the successes of social marketing in addressing a variety of issues, developing countries are evaluating whether or not other business practices can be used to reach social goals.

The private sector has historically been and is expected to remain the primary provider health care services in India (Bhatia, 402). Therefore efforts to improve care

should focus on the private sector. Based on the successes of social marketing and the significant number of independent providers in India, “social franchising”—the application of the franchise business model to provide social services traditionally fulfilled through government provision—has been suggested as a means to improving the quality and supply of certain types of health care needs.

Recognizing the successes of franchising in the retail and fast food industries, the United States Agency for International Development (USAID), the U.S. government department charged with providing assistance to developing nations, began providing funding in the mid 1990s to two NGOs that were implementing social franchising strategies for the delivery of health care services in Mexico and the Philippines (LaVake, 2 and Jones, 11). Developing countries that relied on the private provision of health care experienced many of the problems (such as coordination, unreliable service delivery, and high costs associated with start-up) that franchising had helped solve in other fields. In theory, social franchises would align provider incentives, create reliability in service delivery, and allow for economies of scale throughout the health care sector in developing countries. Montagu (121) defines social franchising as:

“An attempt to use franchising methods to achieve social rather than financial goals, influencing the service delivery systems of the private sector similarly to the way in which social marketing has adapted traditional outlets for commodity sales.”

Social franchising is a relatively recent innovation. While there have been numerous studies on the effectiveness of social marketing and there is extensive literature on the successes of franchising as a business model, limited research has been done on the effectiveness of social franchising. Most of the literature has focused on the theory of

why social franchising should be effective, qualitative case studies of individual programs, or summaries of lessons learned from USAID initiatives. The limited empirical analysis that has been done on social franchising has focused on the quality of care provided, access, and equity issues. As a result, there are numerous questions about the effectiveness of social franchising that need to be addressed. One specific area of concern is whether or not social franchising results in more efficient provision of services than public or non-profit provision. This paper fills gaps in the literature by providing a quantitative analysis of the efficiency (measured in terms of clients serviced) of both franchised and non-franchised SRH healthcare facilities in a developing country.

This study uses a 2004 survey of 1,686 Indian health facilities to statistically test the hypothesis that the delivery of sexual and reproductive health services in India through a social franchise network is more efficient than the delivery of the same services through non-franchised private provision, non-governmental organizations, or government provision. Greater efficiency is defined as a greater number of patients seen by each provider at a facility without corresponding declines in the quality of care as perceived by patients.

The quantitative analysis presented in this study suggests that franchised SRH providers are more efficient in terms of number of patients seen than non-franchised providers, but only under certain circumstances. Specifically, franchising is correlated with increases in the number of clients serviced depending on the type of staff employed and whether or not the facility provides clinical services rather than only non-clinical services. Additionally, as patient numbers increase, the perceived quality of service by

clients at franchised facilities is the same as, and in some respects even better than, the quality of services received at non-franchised clinics.

Due to the failure to reject the hypothesis that social franchising of sexual and reproductive health care services is more efficient than other forms of delivery, there are important implications for policy makers. Governments and international organizations that focus their sexual and reproductive health care interventions on NGOs and public provision will probably improve outcomes by targeting the private sector and promoting social franchises when specific circumstances are met. Successful social franchise networks also improve the effectiveness of other types of interventions:

“As a method of organizing an unstructured private sector, franchising is attractive because it incorporates into one system all of the interventions that have been shown to have some effect individually (training, oversight, performance-based incentives, accreditation and certification, vouchers or other external payments schemes, ongoing support relationships and monitoring)” (Prata, 275).

Therefore, policy makers could combine initiatives with an effort to encourage franchising in order to further improve both the provision and quality of health care.

Additionally, where social franchises do not exist, public policies should be tailored to facilitate the appropriate circumstances that benefit franchising and promote the creation of social franchise networks. Where social franchises do exist, but are less efficient than NGOs or public provision (i.e. pharmacies), a study to determine the causes of the inefficiencies (public policies hindering private enterprise, lack of awareness, funding issues, etc.) needs to be conducted so that targeted interventions alleviating these inefficiencies can be implemented. Finally, other areas of health care provision should be compared to sexual and reproductive health care services for similarities in order to

determine whether or not social franchising would prove to be as effective and, therefore, implemented.

Background:

Health care in India, especially sexual and reproductive health care needs significant improvement. While health has inherent value, moreover “poverty and health are inextricably interrelated, and the poor are especially vulnerable to further impoverishment if faced with the high costs of illness or the death of a family member” (Prata, 274). India, like “most developing countries, [has] pursued formal health care system strategies which give primacy to government roles in financing and delivering health services” (Berman, 1463). Despite the Indian government’s commitment to increase the public provision of health care so that it is the primary provider, the private sector currently provides the majority of health care services and is expected to remain the primary provider into the foreseeable future (Bhatia 402). For instance, it has been estimated that “60-85% of TB cases seek treatment initially from [private sector providers (PSPs), and] about two-thirds of these cases stay with PSPs, rather than changing to public sector providers. Similarly, 80% of consultations for childhood diarrhea in India are with PSPs, most of whom are not fully qualified” (Smith, E., 10). As a result, 75% of total health care spending, which is estimated at 6% of GDP, is in the private sector (Bhat, 26).

One of the main reasons for the prevalence of the private sector in health care is a lack of alternatives: “public health services reach only a small portion of the population” (Smith, J., 20). Additionally, a recent study demonstrated that “both in terms of

thoroughness of diagnosis and doctor-patient communication, the quality of care appears to be much higher in the private than in the public sector” (Bhatia, 402). Recognizing these benefits, some governments and international agencies are pushing for more private sector involvement and further argue “that an expanding private sector reduces the burden on the state of ever-increasing demand for health care, offers consumers choice and stimulates competition” (Bhatia, 402). How the public sector can promote private sector growth or improvement in health care is an ongoing debate. One area of the private sector that is seeing increasing attention and could possibly benefit from changes in the current public policy is the franchising of sexual and reproductive health (SRH) services.

Social franchising is “a franchise system, usually run by a non-governmental organization, which uses the structure of a commercial franchise to achieve social goals” (Montagu, 129). DKT-International, a U.S. based non-governmental organization historically focused on social marketing campaigns, initiated the Janani network in 2000 using the social franchising model. Janani attempts to bring existing SRH providers into its franchise network in order to improve the quality of care and ensure that costs are within reach of the poor.

Originally created in 1996 as a social marketing organization, Janani partnered with the Indian government to provide subsidized SRH products (condoms and oral contraceptives) to the inhabitants of three states in India—Bihar, Jharkhand, and Madhya Pradesh. Building on the success of this endeavor, Janani expanded its efforts by establishing a social franchising network in 2000. Rather than simply supplying SRH providers with subsidized products, the Janani franchise network provides a member site

(franchisee) with training, support, and a referral system. Member sites include small shops, clinics, and hospitals.

In order to establish and maintain the franchise network, Janani receives funding from the Indian government, foreign government assistance programs such as AusAid and USAID, and foundations such as The David and Lucile Packard Foundation, The Population Foundation of India, and The John D. and Catherine T. MacArthur Foundation. Janani also receives funding from its parent organization, DKT-International, a social marketing organization based in the United States. Janani, however, is not entirely dependent on this funding to maintain its operations. In 2007, Janani estimated that its revenues met 51% of expenses. Ultimately, Janani's goal is to have revenues cover all expenses so that it can be entirely self-sufficient.

Since its inception, Janani estimates that its products and services have “prevented 6.10 million unwanted pregnancies.” In 2006, Janani helped an estimated 1.2 million couples by, among other things, distributing over 40 million condoms and 3.2 million oral contraceptives, and conducting almost 30 thousand safe abortions and 46 thousand tubal ligations. Janani was able to provide couples with protection for an entire year at a cost of \$2.31 per couple, an amount significantly lower than international estimated cost of \$20 per couple (Janani, Impact).

Due to its successes at delivering SRH products and services and its efforts to become financially self-sustaining, Janani's social franchising network has rapidly grown. In fact, Janani claims that “it is among the largest public-private networks delivering family planning and reproductive health care in India . . . [and] has emerged as

one of the largest service delivery programmes in world” (Janani, Overview). As of June 2007, Janani states that it has trained “over 40,000 rural health providers, has established 663 medical clinics, and is delivering its products through 31,000 ships (not including its efforts in the Madhya Pradesh state)” (Janani, Overview). By comparison, the Greenstar Network, a similar social franchising organization in Pakistan that has been operating for a similar length of time, has trained 18,000 health care providers and distributes its services through 80,000 retail outlets (Greenstar, What We Do). Despite being a larger network than Janani, Greenstar estimates its cost at providing SRH services at \$5 per couple per year, indicating that Janani might be more efficient and therefore the ideal network to evaluate the efficiency of social franchising.

Literature Review:

In a study on the economic impact of franchising in the United States conducted by PriceWaterhouseCoopers for the International Franchise Association (IFA) Education Foundation, a “franchise” was defined as:

“The agreement or license between two parties which gives a person or group of people (the franchisee) the rights to market a product or service using the trademark of another business (the franchisor). The franchisee has the rights to market the product or service using the operating methods of the franchisor. The franchisee has the obligation to pay the franchisor certain fees and royalties in exchange for these rights. The franchisor has the obligation to provide these rights and generally support the franchisee. In this sense, franchising is not a business or an industry, but it is a method used by businesses for the marketing and distribution of their products or services” (PriceWaterhouseCoopers, iii).

The study found that the 767,483 franchises operating in the United States provided almost 10 million jobs and over \$600 billion in output.

Due to the successes and extensive impacts, franchising has been significantly studied and analyzed. Both theoretical and quantitative, the focus of these studies has been on why franchising occurs, what are the benefits that result, and what are the conditions necessary for a successful franchise to occur. One of the primary reasons for the success of franchises in addressing these issues is that it aligns incentives.

In a business with a central organization and multiple sales locations, the goals of the central organization depend heavily on the success of the local units. According to agency theory, “monitoring costs for the central corporation to assure quality will be high compared with the localized benefits” (Montagu, 122). Therefore, in order to reduce monitoring costs, while ensuring quality, the central organization must find a way to align the incentives/goals of the local unit with that of the central organization. Franchising, as defined above, aligns the incentives of the central organization and local sales unit.

Franchising also allows for significant cost savings. Large amounts of capital are often required in order to start or expand a business. With franchising, the central organization (franchisor) does not have to provide these financial resources because the franchisee (local operator) is required to provide the financing in order to “buy” into the network. As a result, a franchise organization is able to expand faster than a non-franchise organization. As the network size increases, economies of scale provide additional savings in the areas of purchasing supplies and marketing (Montagu, 122-124).

While the practice and success of franchising in developed countries has been extensively studied, the same cannot be said for the franchising in developing countries,

especially the franchising of social services. Most of the literature on social franchising in developing countries has focused on the theoretical benefits. Dominic Montagu argues that the unconnected, private provision of social services that exists throughout many developing countries would benefit by establishing a network of providers. Montagu reasons that private providers of health care would theoretically receive many of the benefits that result from the franchising model, as it exists in developed countries. Prada (275) contends that franchising private health care providers in Africa would improve the effectiveness of public interventions such as voucher systems, training, regulation, and accreditation that target the quality of health care provision. The remainder of the literature on social franchising is focused on case studies of specific social franchising programs. These studies primarily provide lessons learned and recommendations for future social franchising endeavors.

Due to the limited amount of literature on social franchising, numerous questions remain to be studied. Primary among these is whether or not social franchises are more effective (as measured by quality, efficiency, or reach) at providing health care than public provision. In a study of women receiving medical services in the Kolar District of India, it was demonstrated that, “both in terms of thoroughness of diagnosis and doctor-patient communication, the quality of care appears to be much higher in the private than the public sector” (Bhatia, 402). Additionally, Berman (1469-1470) demonstrates that private rather than public providers currently meet the majority of rural health care needs in India. Whether or not social franchising is more efficient at providing health care services than public providers has yet to be determined.

Efficiency has generally been defined as an “absence of waste, or using the resources as effectively as possible to satisfy people’s needs and desires” (Varatharajan, 2). This is an economic definition that applies to profit oriented markets. “Defining efficiency with respect to the public health care sector, [however,] is trickier because it is people-oriented rather than profit-oriented” (Varatharajan, 3). Kruk’s (10) survey of the literature broadly defines health care efficiency as “extracting the greatest health gains from a set of inputs” (Kruk, 10). Within this definition there are three ways to evaluate efficiency in health care: cost effectiveness, technical, and operating. Efficiency based on cost effectiveness, or allocative efficiency, is based on “improv[ing] health at least cost” (Mills, 2). Technical efficiency is “where [the] maximum possible output is obtained from a given quantity of inputs, or a given output is achieved with minimum inputs” (Mills, 2). Finally, operating or administrative efficiency is “where the least cost combination of inputs is used to produce given outputs” (Mills, 3). Since “health care system efficiency depends significantly on the appropriate mix of factor inputs,” (Suraratdecha, 3) comparing the outcomes (clients served, cost per client, etc.) of franchised and non-franchised sexual and reproductive health care providers based on the inputs (mix, quantity, etc.) will provide an accurate measure of the efficiency differences.

Due to the successes of using business models to meet SRH services needs in developing countries, particularly the successes of social marketing, there has been a push to determine additional ways to implement business practices in order to fulfill development goals. One such area that has experienced significant growth is in the franchising of SRH services. While the impacts and successes of franchising have been

documented in other fields, the impacts of social franchising have not been rigorously evaluated. This paper seeks to address that gap by quantitatively exploring the relationship between technical efficiency in delivering sexual and reproductive health care services and membership in India's Janani franchise network.

Conceptual Model:

I hypothesize that the efficiency of an SRH service provider that is part of a social franchise network is greater than that of other SRH providers (NGOs, governments, etc.). This increased efficiency can be attributed in large part to the benefits of franchising already demonstrated by franchising practices in the private sector. Primarily, by becoming part of a franchise network, the incentives of the franchisee (SRH provider) and the franchisor (network organization) are appropriately aligned, the franchisee has reduced purchasing costs while the network creates awareness of services provided, and the network provides access to additional medical and business training. Each of these elements of a franchise network increases the efficiency of an SRH provider.

In a franchising relationship, the franchisee (independent SRH provider) pays the start up and operational costs as well as ongoing membership fees in order to establish the franchise and remain part of the network. Revenues above and beyond the start up and membership fees are profit for the franchisee. Therefore, the franchisee has an increased incentive, when compared to a not-for-profit provider, to improve efficiency and generate revenue. At the same time, the franchisor has an incentive to improve the services provided to the franchisee. If the franchisees do not see a benefit in being part of the franchise network, they can choose to leave. As a result, the franchisor must continue

to demonstrate its value to the network by helping the network to improve its bottom-line, which leads to the characteristics of a franchise network that enable it to improve efficiency.

Many of the increases in efficiency that result from a franchise network can be attributed to economies of scale. A large network has significantly greater negotiating power for supplies than an individual provider. The network can also increase awareness of the services provided by carrying out a large marketing and branding campaign that the individual provider would not have been able to conduct. Finally, the network can provide the franchisees with medical and business training (such as best practices or operating procedures) that improve both the quality of care and business operations. Due to the savings on supplies, marketing campaigns, and additional medical and business training, franchisees will be more efficient than providers that are not part of a franchise network.

While social franchising increases the efficiency of a provider, there is the possibility that efficiency determines whether or not a provider joins a social franchising network. For instance, franchising networks could require a high level of efficiency in order to be accepted into the network. Or, the more efficient providers could be the only providers electing to become a franchise. Conversely, it is possible that more efficient providers do not join a franchising network, simply because they do not need to in order to turn a profit. As a result, only the less efficient providers would chose to join a network.

In addition to the concerns about the direction of causality—that is, whether or not efficiency causes a provider to become part of a franchise network—several factors could affect both efficiency and franchise membership. First, the location of the provider in an urban versus rural setting could impact both access to the franchise network and to resources that affect efficiency. Franchise networks could focus membership efforts only in urban areas due to the close proximity of SRH providers. Additionally, urban SRH providers might be more efficient simply because there is a larger demand for services in urban areas. These providers might be required to be more efficient in order to keep up with demand, whereas rural providers might be less efficient due to decreased demand for services. The opposite is also possible; there could be a large number or “glut” of providers in an urban area in order to take advantage of the large demand, whereas rural areas might have a limited number of providers for a large geographic area resulting in these providers being forced to be more efficient in order to keep up with demand.

Characteristics of the personnel employed by the provider, such as the total number of employees and the level of employee training, are additional factors that could impact efficiency and the choice to become part of a franchise network. Staff size could provide benefits deriving from economies of scale. With increases in staff size, employees could become more specialized in their function increasing their ability to complete their designated tasks. As a result, a larger staff could enable a provider to fulfill client needs more efficiently than a smaller staff. This increased efficiency due to a large staff size could reduce the benefits of and, therefore, the incentive to join franchise network. The level of employee training could also impact efficiency. The time it takes to

recognize symptoms or provide medical advice probably depends on the staff's level of training. For instance, a registered doctor will probably be more efficient at service delivery than an untrained rural practitioner. The level of staff training could also impact the choice to join a franchise network. The direction of this relationship, however, is uncertain; highly trained staff might not see the benefits of joining a network because they are already operating at a high efficiency level, or, conversely, highly trained staff could better recognize the benefits of the franchise network.

Finally, specific characteristics of the provider facility, such as the number of years a facility has been open and whether or not other services are provided, could have an effect on both efficiency and franchise membership. As the number of years that a facility has been in operation increases, it is likely that the efficiency of the operation will also increase. Over time, facility staff will learn from previous mistakes and develop new protocols that will increase the facility's ability to handle its client load and increase its efficiency. As a result, older providers might be reluctant to join a franchise network due to their already high levels of efficiency and previous history of success. It is also possible that efficiency and franchise membership could be affected if other services were provided by the facility. The direction of these relationships, however, would be dependent of the type of additional services provided. For instance, if the facility provided numerous additional services, the length of client visit could be long resulting in a reduction in efficiency if measured by the number of clients seen. Conversely, if the facility provides few additional services, the length of client visit could be short resulting in an increase in efficiency if measured by the number of clients seen. Finally, if SRH

services are a small part of the provider's overall service provision, the provider might not derive significant benefits from joining a franchise network. If, however, the provider offers limited additional services, the benefit and incentive to join a franchise network will be significant.

While there are many variables besides being a social franchise that can have an impact on efficiency, both franchise membership and the provider efficiency can be affected by public policy. Public policy can create incentives or disincentives to creating social franchises. A government may provide tax breaks, grants, or other resources that can only be utilized by social franchises. Conversely, a government may implement barriers to social franchising such as a lengthy permitting process, large fees, or other specific requirements that hinder the creation of social franchises. Efficiency can also be impacted by public policy. Government regulations could require each patient be seen by a doctor before leaving the premises, unnecessary medical tests, or that a limited number of patients can be seen in a day potentially decreasing efficiency. On the other hand, governments could increase efficiency by providing facilities with computers or other technologies that improve efficiency.

Analysis Plan:

Primary Regressions:

In order to evaluate the technical efficiency of social franchises to provide sexual and reproductive health care needs in the Bihar district of India, the following model is used to run ordinary least squares regressions:

$$\begin{aligned}
(\#Clients/Month) = & \beta_0 + \beta_1(\text{Franchise}) + \beta_2(\text{StaffType}) + \beta_3(\text{Franchise*StaffType}) \\
& + \beta_4(\text{FacilityType}) + \beta_5(\text{FacilityType*Franchise}) + \beta_6(\text{FacilitySize}) + \\
& \beta_7(\text{FacilitySize*Franchise}) + \beta_8(\text{Urban}) + \beta_9(\text{Urban*Franchise}) + \\
& \beta_{10}(\text{TripleInteractionTerms}).
\end{aligned}$$

The dependent variable is the average number of clients receiving SRH services (#Clients/Month) by each site over a one-month period. If technical efficiency is “where maximum possible output is obtained from a given quantity of inputs, or a given output is achieved with minimum inputs,”(Mills, 2-3) and the goal of a service provider is to deliver sexual and reproductive health care services to as many clients as possible, the #Clients/Month variable is an excellent indicator of technical efficiency.

The primary dependent variable of interest is a dummy variable indicating whether or not the service provider belongs to the Janani franchise (1=franchise member, 0=otherwise). It is posited that, holding all other variables constant, belonging to a franchise network enables the sexual and reproductive health care provider to more efficiently utilize inputs in order to increase the clients seen per month at the facility.

Included in the regression model are additional independent variables that could be related to the number of patients seen per month by a given sexual and reproductive health care provider. The regressions include variables on the number and type of staff employed by the facility. The number of staff on site clearly relate to the number of patients seen per month, so a variable indicating the number of the different types of staff is included in the initial regression. Six staff variables are created for the regression analysis. These staff variables group facility staff based on specific functions. The “Doctors” variable includes general physicians, general surgeons, ob/gyns, and pediatricians. The “Clinsupport” variable includes sonologists, nurses/paramedics,

auxiliary nurse/midwife, and lady health visitors. The “Adminsupport” variable includes family planning counselors, clinical coordinators, and lab technicians. The “Pharmacy” variable includes pharmacists, medical store workers, and compounders. The “Traditional” variable includes rural medical practitioners, woman medical practitioners, and male health workers. Finally, the “Other” variable includes all other facility staff. Interaction terms between the type of staff and franchise membership are also included.

Additional regressions include further controls, such as facility type, facility size, facility location (urban or rural), and additional interaction terms. For facility type, the dummy variable “Clinic” is used to indicate facilities that provide clinical services such as sterilizations and abortions. Facilities that strictly provide SRH products, such as medical stores and the Titli centers, are considered nonclinical. The dummy variable “SmallStaff” indicates facilities with a total staff of less than or equal to two employees – the median staff size of the facilities. These facility variables are included because membership in the Janani network is not dependent on the type of facility. Therefore, the Janani network includes small shops, hospitals, and clinics. A different type of facility could be more efficient at providing SRH services. For instance, a large hospital might be more efficient than a small shop for a variety of reasons (more staff to help clients or more resources).

A dummy variable “Urban” is included to indicate whether or not a facility is located in an urban setting. The number of clients serviced could be affected by the location of the facility for several reasons. Rural providers might have a smaller client base to draw from than a provider in an urban setting. Conversely, there could be a “glut”

of providers in an urban setting, so the rural provider might be more efficient at delivering services.

Finally, double and triple interaction terms are included in the regressions in order to evaluate whether franchising has a different impact on the number of clients serviced depending on staff type, size, location, and so on. It is anticipated that franchising could interact with different characteristics of a facility differently.

Heterogeneous Effects:

There is the possibility that efficiency could be impacted by heterogeneous factors. For instance, clients could be visiting the facility to receive different types of SRH services: either clinical or non-clinical (clinical services include abortions, sterilizes, injections and pregnancy tests whereas non-clinical services are counseling services or the purchases of SRH products such as contraceptives). In order to address this concern, the regressions described above are rerun under two specific restrictions. First, the regressions are run restricting the observations to clients receiving clinical SRH services. Second, the regressions are run restricting the observations to clients receiving non-clinical SRH services.

Reverse Causation Concerns:

There is a potential problem of reverse causation. For instance, only the most efficient facilities might choose to enter or be allowed to enter the Janani network. Conversely, it is possible that the most efficient facilities might not see any benefit in

joining the network, so only the least efficient facilities are included. The best way to address these concerns would be to randomly assign facilities to two groups—network members and non-members—and compare the results. Unfortunately, this was not done in the study, so an alternative method is used. In order to address the reverse causation concern, descriptive statistics on a number of alternative variables not included in the initial regressions (i.e. how the facility keeps track of its records, what type of equipment it has access to, and when it opened) are tabulated and compared between Janani members and non-members. If there are significant differences between member and non-member groups, then there might be some concern about reverse causation.

Quality:

If Janani membership does increase efficiency, the next logical question is whether or not this increase in efficiency comes at the expense of quality. In order to address this concern, responses to questions from the client surveys about the client's experience at the facility are used to create six quality indicator variables. These variables are the dependent variable in an additional set of regressions using the following model:

$$(\text{QualityMeasures}) = \beta_0 + \beta_1(\text{Franchise}) + \beta_2(\text{TotalClients}) + \beta_3(\text{Franchise} * \text{TotalClients}) + \beta_4(\text{StaffType}) + \beta_5(\text{FacilityType}) + \beta_6(\text{Urban})$$

Specifically, six different measures of client perception of quality are used as the dependent variable in the above model: length of wait (wait), provider politeness (provpolite), staff politeness (staffpolite), whether or not the client will return to the facility or go to another facility (return), how the facility compares to other health care facilities (thisbetter), and the client's overall satisfaction with the facility (satisfactory).

“Wait” is the average, across all the clients, of the number of minutes the clients waited at the facility. Before taking the average for the “wait” variable, values of 996 and 998 were changed to “missing”. “Provpolite” is the average, across all the clients, of the clients’ rating of the politeness of the provider based on a 1-5 scale where 1 is the most favorable rating and 5 is the least favorable rating. “Otherpolite” is the average, across all the clients, of the clients’ rating of the other staff’s politeness based on a 1-5 scale where 1 is the most favorable rating and 5 is the least favorable rating. Before taking the average for the “otherpolite” variable, all values of “8”, which indicates a response of “not applicable”, were changed to “missing”. “Return” is the average, across all the clients, of the value of a zero-one variable that took the value “1” if the client said they would return to the facility for a follow-up visit, and ‘0’ otherwise. “Thisbetter” is the average, across all the clients, to a question asking the clients to compare this facility to other facilities based on a 1-5 scale where a response of “1” indicates the client thought the facility was “much better” than other facilities and “5” indicates the client thought the facility was “much worse” than other facilities. Before taking the average for the “thisbetter” variable, all values of “8”, which indicates a response of “don’t know”, were changed to missing. “Satisfactory” is the average, across all the patients, of the clients’ overall level of satisfaction with the facility based on a 1-5 scale where 1 is the most favorable rating and 5 is the least favorable rating. Before taking the average for the “satisfactory” variable, all values of “8”, which indicates a response of “don’t know”, were changed to missing.” Finally, since the number of clients interviewed at each facility varies, the variable

“count” was created based on the number of clients interviewed per site in order to properly weight client responses in the quality regressions.

Data Description:

In 2001, the “Alternative Business Models for Family Planning” (ABM) project was created to evaluate “the impact of four different social business models to promote family planning in 3 countries: Ethiopia, Pakistan, and India.” Recognizing a significant increase in the number of reproductive health services in developing countries that were utilizing business models to fulfill their mission, and the lack of research evaluating the effectiveness of these models, the goal of ABM was to assess these different approaches in order to provide best practices information. The ABM project was funded by the David and Lucile Packard Foundation, which provides funding to people, organizations, and projects that “improve the lives of children, enable the creative pursuit of science, advance reproductive health, and conserve and restore earth’s natural systems.”

One of the models that ABM chose for analysis was social franchising. ABM evaluated Janani, an organization that utilized the franchise business model in order to provide sexual and reproductive health care services throughout India. In order to evaluate Janani, a private research organization was contracted by ABM to conduct extensive surveys of health facilities, its staff, and its clients. Janani has focused its efforts on three states in India: Bihar, Jharkhand, and Madhya Pradesh. A “multistage cluster sample design was applied to the entire state of Bihar except for some southwest districts that were politically unsafe for fieldwork and also had relatively little franchise activity” (Stephenson, 13).

Bihar state was broken down into districts within the state's six regions and districts were chosen based on probability proportional to size (PPS). Urban and rural areas within the district were also identified. Urban areas were broken down based on wards with the ward containing the capital district and two additional randomly chosen wards being selected for the survey. In rural areas, villages were chosen and surveyed based on PPS with all surrounding villages being included in the survey. In both the urban and rural areas, all health facilities in the chosen ward or villages were surveyed regardless of whether or not they were in the Janani network. All staff members were surveyed if they were present on the day of the visit and if they were authorized to provide family planning services. Finally, four clients on the day of the survey were selected at random for exit interviews.

The facility, staff, and clients were given separate surveys with each survey focusing on different aspects. The facility survey focused on the services provided and, when appropriate, aspects of involvement in the franchise. The staff survey focused on training and the referral process. The client survey focused on the reasons for a visit, visit experience and franchise awareness.

Upon completion of the research 1,317 facilities, 1,944 staff and 4,905 clients were surveyed. Two complete surveys of the same facilities were conducted in 2001 and 2004. However, only the data from 2004 is utilized for this analysis. Due to its focus on the Bihar district, there is some concern about generalizability to other districts. Despite this potential problem, the scope and breadth of the surveys provide a significantly large data set for the proposed analysis.

Table 1 gives descriptive statistics for the survey data that is used for the regressions of primary interest. Table 2 provides descriptive statistics for the survey data that is used to address heterogeneous concerns. Table 3 provides descriptive statistics for the survey data that is used to address reverse causation concerns. Finally, Table 4 provides descriptive statistics for the survey data that is used to evaluate quality concerns.

Table 1: Descriptive Statistics for Primary Regressions

Variable	Obs.	Frequency Distrib.	Mean	Standard Deviation	Minimum Value	Maximum Value
Total Number Clients	1334	-	80.94	196.579	0	5361
Franchise Membership	1686	Yes = 395 No = 1291	-	-	-	-
Urban	1704	Yes = 429 No = 1275	-	-	-	-
Staff Information:						
Total Staff	1341	-	2.34	2.72	0	43
Doctors	1347	-	0.31	0.80	0	8
Clinical Support Staff	1347	-	0.32	1.28	0	29
Administrative Support Staff	1347	-	0.05	0.34	0	8
Pharmacy Staff	1347	-	0.62	1.14	0	12
Traditional Staff	1347	-	0.80	1.07	0	14
Other Staff	1342	-	0.25	0.89	0	18
Facility Types:						
Clinic	1704	Yes = 1111 No = 593	-	-	-	-
Small Clinic	1704	Yes = 1014 No = 690	-	-	-	-

Table 2: Descriptive Statistics for Heterogeneous Variables

Heterogeneous Concerns:						
Variable	Obs.	Frequency Distrib.	Mean	Standard Deviation	Minimum Value	Maximum Value
Total Number Clinical Clients	1334	-	19.03	152.10	0	5001
Total Number Non-Clinical Clients	1336	-	61.87	101.03	0	1255

Table 3: Descriptive Statistics for Reverse Causation Variables

Reverse Causation Concerns:						
Variable	Obs.	Frequency Distrib.	Mean	Standard Deviation	Minimum Value	Maximum Value
Year hosp/clinic/shop opened	1312	-	1992	9.82	1934	2004
Approved to provide abortions	1304	Yes = 197 No = 1107	-	-	-	-
Provide family planning services	1334	Yes = 1333 No = 1	-	-	-	-
Year began providing family planning services	1327	-	1993	8.24	1956	2004
Does the facility have:						
Major Operating Theater	1328	Yes = 121 No = 1207	-	-	-	-
Minor Operating Theater	1329	Yes = 168 No = 1161	-	-	-	-
Ultrasound	1329	Yes = 27 No = 1302	-	-	-	-
Newborn Incubator	1328	Yes = 24 No = 1304	-	-	-	-
Telephone	1324	Yes = 359 No = 965	-	-	-	-
What type of record keeping does the facility use:						
Client record/card	1327	Yes = 104 No = 1223	-	-	-	-
Client register	1326	Yes = 322 No = 1004	-	-	-	-
Informal Notebook	1325	Yes = 199 No = 1126	-	-	-	-
Other client record	1213	Yes = 31 No = 1182	-	-	-	-
Do not maintain record	1270	Yes = 754 No = 516	-	-	-	-

Table 4: Descriptive Statistics for Quality Variables

Quality (Client):					
Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Wait	1137	12.39	17.14	0	157.5
Provpolite	1137	1.60	0.43	1	3
Otherpolite	884	1.67	0.47	1	5
Return	1137	0.20	0.26	0	1
Thisbetter	1134	1.68	0.52	1	4
Satisfactory	1134	1.68	0.36	1	3.5
Count	1137	5.21	1.69	1	13

Results

Primary Regressions:

Multiple regressions are run in order to evaluate whether or not the efficiency of a sexual and reproductive health care provider is greater for franchise members than non-members. Table 5 presents four regressions in which the total number of clients (clients receiving both clinical and non-clinical services from the facility) is the dependent variable.

The first regression includes all the staff type variables and the clinic and urban dummy variables. The results from this regression indicate that the coefficients on Doctors, Adminsupport, and Pharmacy are significant and positive. Therefore, with each additional doctor, administrative staff person or pharmacy staff person, the facility increases the number of clients serviced. The coefficient on Clinic is also significant, but in a negative direction indicating that non-clinical facilities (i.e. stores) service more clients.

In the second regression, the Franchise dummy variable is included. In this regression, the coefficients on Doctors, Adminsupport, and Pharmacy remain significant

and positive, and the Clinic variable remains significant and negative. The Franchise variable, however, is not significant.

In order to evaluate whether the degree to which the addition of a staff member correlates with larger numbers of patients seen in franchises than in non-franchises, interaction variables between the Franchise variable and all the staff type variables are added to the third regression. Again, the coefficients on Doctors, Adminsupport, and Pharmacy are significant and positive and the Clinic variable is significant and negative. Similar to the previous regression, the Franchise variable is not significant. In this regression, however, the coefficients on the Franchise*Doctors and Franchise*Clinsupport interaction terms are significant and positive indicating that an additional doctor and/or an additional clinical support staff in a franchise facility is correlated with a higher number of patients serviced than an additional doctor and/or an clinical support staff in a non-franchise facility. These results suggest that Franchising might be associated with a different number of clients serviced depending on the staff type and whether the facility provides exclusively clinical or non-clinical services. This possibility is evaluated in the fourth regression by including triple interaction terms between Franchise, Clinic, and staff variables.

The results from the fourth regression indicate that franchising might be correlated with a different number of patients serviced depending on the staff type and whether or not the facility provides clinical services. Again, the Doctor, Adminsupport, and Pharmacy variables are significant and positive while the Clinic variable is significant and negative. The single interaction terms Franchise*Doctors and

Franchise*Clinsupport are no longer significant. The triple interaction term for Franchise*Clinic*Doctors, however is significant and positive (149). This suggests that the positive, significant coefficient on Franchise*Doctors in column 3 arises mostly from an association in facilities providing clinical services, which would be expected.¹

¹ In order to interpret the Franchise*Clinic*Doctors triple interaction term, several other variables need to be taken into account. First, the addition of a doctor is correlated with an increase in the number of patients seen (34.4) regardless of the type of facility or its franchise status. Second, a franchised facility is correlated with fewer patients serviced (-43.9) than a non-franchised facility. Finally, an additional doctor at a franchised facility is correlated with fewer patients serviced (-19.3) than an additional doctor at a non-franchised facility. Therefore, the triple interaction term, Franchise*Clinic*Doctors, indicates that, for clinical patients, the addition of a doctor at a franchised clinical facility $(34.4 + (-43.9) + (-19.3) + 149 = 120.2)$ is correlated with 85.8 more patients serviced than the addition of a doctor at a non-franchised clinical facility (34.4).

Table 5: Regressions on total clients serviced

Variable	#1	#2	#3	#4
Doctors	47.8 (5.62)	50.6 (5.79)	34.4 (3.75)	34.4 (3.74)
Clinsupport	3.3 (0.65)	3.0 (0.60)	-0.0 (-0.01)	-0.0 (-0.01)
Adminsupport	54.1 (3.31)	53.5 (3.28)	42.4 (2.57)	42.4 (2.57)
Pharmacy	11.1 (2.20)	10.2 (2.02)	14.3 (2.66)	14.3 (2.66)
Traditional	4.5 (0.78)	7.4 (1.22)	13.7 (1.88)	13.8 (1.89)
Other	9.1 (1.52)	7.9 (1.31)	7.0 (1.19)	7.0 (1.19)
Clinic	-42.8 (-3.68)	-54.8 (-3.79)	-64.7 (-4.01)	-64.6 (-4.00)
Urban	-3.3 (-0.23)	-6.3 (-0.43)	-11.4 (-0.79)	-11.0 (-0.76)
Franchise	-	-23.9 (-1.39)	-50.3 (-1.73)	-43.9 (-1.47)
Fr*Doctors	-	-	110.1 (4.19)	-19.3 (-0.29)
Fr*Clinsupport	-	-	80.6 (3.84)	48.1 (0.65)
Fr*Adminsupport	-	-	12.9 (0.21)	-85.5 (-0.46)
Fr*Pharmacy	-	-	-27.6 (-1.71)	-14.4 (-0.57)
Fr*Traditional	-	-	-3.8 (-0.28)	-6.4 (-0.45)
Fr*Other	-	-	49.4 (0.73)	44.9 (0.66)
Fr*Clinic	-	-	-81.5 (-1.55)	-99.5 (-1.39)
Fr*Clin*Doctors	-	-	-	149.0 (2.07)
Fr*Clin*Clinsup	-	-	-	27.0 (0.35)
Fr*Clin*Adminsup	-	-	-	92.6 (0.47)
Fr*Clin*Pharm	-	-	-	-19.0 (-0.59)
Fr*Clin*Trad	-	-	-	12.1 (0.23)
Fr*Clin*Other	-	-	-	0.0 (0.00)
Constant	77.1 (6.40)	88.7 (6.06)	99.3 (6.34)	99.2 (6.32)
N	1328	1328	1328	1328
R ² Adjusted	0.065	0.066	0.114	0.114

*In the above table, all coefficient estimates are included with the t-statistic in parentheses.

Heterogeneous Effects:

The above regressions suggest that the association between the number of patients serviced and franchising may depend on the type of services provided. These results correspond to the previously stated concern that heterogeneous effects might impact

efficiency. Since the type of service being provided determines staff type, it is possible that franchise membership has a different impact on staff depending on the types of services offered.

In order to evaluate the possibility of heterogeneous effects, clients are divided into two groups: clients receiving clinical services and clients receiving non-clinical services. The same regressions as in Table 5 are run separately with clients receiving clinical services and clients receiving non-clinical services as the dependent variables. An additional regression is included to account for the possibility that franchising might interact differently depending on the size of the facility. It is possible that smaller facilities might benefit more from franchising due to the reduced marketing and inventory costs (economies of scale) associated with a large network organization. In order to account for facility size, the SmallStaff variable is added along with double and triple interaction terms between SmallStaff and Franchise and between SmallStaff, Franchise, and staff type. Finally, an interaction term between Franchise and Urban is included in this last regression in order to determine whether or not franchise is associated with different client totals depending on location. Tables 6 and 7 show these results.

The results in Table 6 show that franchising is not significantly correlated with the number of clients receiving clinical services. In each of the regressions the Franchise variable is not significant. With the exception of Franchise*Doctors and Franchise*Clinsupport, all the coefficients for the interaction terms between franchise, facility type, staff type, and staff size are not significant. The coefficients for the Franchise*Doctors and Franchise*Clinsupport interaction terms are significant and

positive indicating that an additional doctor and/or an additional clinical support staff at franchised facilities is correlated with a larger number of clinical patients serviced than the addition of a doctor or clinical support staff person at a non-franchised facility.

In the fifth regression, the SmallStaff variable is significant and negative indicating that facilities with a small staff are correlated with a smaller number of clinical clients serviced than a facility with a large staff. Since the interaction terms between Franchise, SmallStaff, and staff types are not significant, franchising does not appear to be correlated with any difference in the number of clinical clients serviced depending on the staff size. Similarly, the Franchise*Urban interaction term is not significant indicating that franchising does not appear to be associated with differences in the number of clinical patients serviced depending on the location of the facility.

Table 6: Regressions on total clients receiving clinical services

Variable	#1	#2	#3	#4	#5
Doctors	28.3 (4.21)	28.2 (4.07)	22.0 (2.97)	22.0 (2.96)	17.3 (2.22)
Clinsupport	1.0 (0.25)	1.0 (0.25)	-0.8 (-0.20)	-0.8 (-0.20)	-1.3 (-0.31)
Admainsupport	32.7 (2.54)	32.8 (2.54)	27.6 (2.07)	27.6 (2.07)	26.8 (2.01)
Pharmacy	-2.4 (-0.61)	-2.4 (-0.60)	-2.1 (-0.48)	-2.1 (-0.48)	-8.0 (-1.57)
Traditional	6.2 (1.38)	6.1 (1.26)	11.3 (1.91)	11.3 (1.91)	9.6 (1.61)
Other	0.2 (0.03)	0.2 (0.05)	-0.1 (-0.02)	-0.1 (-0.02)	-2.3 (-0.47)
Clinic	0.0 (0.01)	0.7 (0.06)	-6.4 (-0.49)	-6.4 (-0.49)	-12.5 (-0.99)
Urban	-6.3 (-0.55)	-6.1 (-0.54)	-7.2 (-0.62)	-7.1 (-0.61)	-8.7 (-0.72)
Franchise	-	1.3 (0.09)	-6.4 (-0.27)	-3.7 (-0.15)	-56.9 (-1.23)
Fr*Doctors	-	-	47.2 (2.23)	-10.7 (-0.20)	51.7 (2.43)
Fr*Clinsupport	-	-	39.8 (2.35)	6.1 (0.10)	38.7 (2.11)
Fr*Admainsup	-	-	5.8 (0.11)	-32.5 (-0.22)	8.3 (0.16)
Fr*Pharmacy	-	-	-0.6 (-0.04)	6.7 (0.33)	0.5 (0.03)
Fr*Traditional	-	-	-8.3 (-0.75)	-9.2 (-0.81)	-4.7 (-0.37)
Fr*Other	-	-	16.5 (0.30)	16.3 (0.30)	39.6 (0.44)
Fr*Clinic	-	-	-54.8 (-1.29)	-60.6 (-1.05)	-
Fr*Clin*Doctors	-	-	-	65.3 (1.12)	-
Fr*Clin*Clinsup	-	-	-	32.9 (0.53)	-
Fr*Clin*Admainsup	-	-	-	34.6 (0.22)	-
Fr*Clin*Pharm	-	-	-	-10.4 (-0.40)	-
Fr*Clin*Trad	-	-	-	0.5 (0.01)	-
Fr*Clin*Other	-	-	-	0.0 (0.00)	-
Small Staff	-	-	-	-	-32.0 (-2.07)
Fr*Small	-	-	-	-	41.5 (0.67)
Fr*Small*Doctors	-	-	-	-	-45.9 (-0.81)
Fr*Small*Clinsup	-	-	-	-	-3.3 (-0.04)
Fr*Small*Admainsup	-	-	-	-	0.0 (0.00)
Fr*Small*Pharm	-	-	-	-	12.3 (0.29)
Fr*Small*Trad	-	-	-	-	1.2 (0.05)
Fr*Small*Other	-	-	-	-	-21.8 (-0.19)
Fr*Urban	-	-	-	-	-24.2 (-0.52)
Constant	6.2 (0.65)	5.6 (0.48)	11.6 (0.92)	11.6 (0.92)	48.4 (2.31)
N	1328	1328	1328	1328	1328
R ² Adjusted	0.026	0.025	0.039	0.036	0.037

*In the above table, all coefficient estimates are included with the t-statistic in parentheses.

The same regressions run with clinical patients as the dependent variable are run with non-clinical patients as the dependent variable. The results from these regressions are presented in Table 7. In the first regression, which included staff type variables, a Clinic dummy variable, and an Urban dummy variable, the coefficients on Doctors, Adminsupport, Pharmacy and Other staff are statistically significant and positive. Additionally, the Clinic variable is statistically significant and negative, which is logical because patients seeking non-clinical services are more likely to visit a non-clinical facility than a clinical facility.

In the second regression, the Franchise dummy variable is added. For the first time in all the regressions, the coefficient on Franchise is statistically significant, but negative. Therefore, franchise membership appears to be correlated with a decrease of approximately 25 clients serviced for those clients seeking non-clinical services. Since many of the staff variables are significant and positive and the Clinic variable is significant and negative in this regression, the third regression, which includes interaction terms between franchising and staff types, is run in order to further evaluate the effect of franchising.

In the third regression, the Franchise variable is again significant and negative, but with a greater magnitude—franchising is correlated with a decrease of approximately 43 non-clinical patients serviced. The Doctors, Pharmacy and Other variables are still significant and positive, and the Clinic variable is significant and negative. Similar to the regressions in previous tables, the coefficients on the Franchise*Doctors and Franchise*Clinsupport interaction terms are significant and positive indicating that an

additional doctor and/or an additional clinical support staff at a franchised facility is correlated with an increased number of non-clinical clients serviced than the addition of a doctor and/or a clinical support staff person at a non-franchised facility. Unlike previous regressions, however, the coefficient on the Franchise*Pharmacy interaction term is significant and negative indicating that an additional pharmacy staff person at a franchised facility is associated with a smaller number of non-clinical patients serviced than the addition of a similar staff person at a non-franchised facility.

Triple interaction terms for Franchise, staff type and Clinic are added to the fourth regression. In this regression, the Doctors, Pharmacy, and Other variables are again significant and positive while the Clinic and Franchise variables are significant and negative. Similar to the previous regression, the coefficient on the Franchise*Pharmacy variable is significant and negative, indicating that an additional pharmacy staff person at a franchised facility is associated with a smaller number of non-clinical patients serviced than the addition of a similar staff person at a non-franchised facility. The only triple interaction term with a significant coefficient is the Franchise*Clinic*Doctors variable (83.7). As before, this refines the information in column 3, which shows that the association between a larger number of doctors (all else equal) and a larger number of patients seen is greater in franchised clinics than in non-franchised ones; it adds the additional information that that tendency occurs to an even greater extent in facilities that provide clinical services than in those that do not.²

² In order to interpret the Franchise*Clinic*Doctors triple interaction term, several other variables need to be taken into account. First, the addition of a doctor is correlated with an increase in the number of patients seen (12.4) regardless of the type of facility or its franchise status. Second, a franchised facility is

Finally, in the last regression, several interaction terms are added to address the possibility that franchising might be associated with a different number of non-clinical patients serviced depending on the facility size and location. The results for this regression are similar to that of the third regression: the coefficients on Doctor, Pharmacy, Other, Franchise*Doctors, and Franchise*Clinsupport variables are positive and significant while the coefficients on Clinic, Franchise, and Franchise*Pharmacy variables are significant and negative. The coefficients on the variables accounting for staff size and location are not significant.

correlated with fewer patients serviced (-39.6) than a non-franchised facility. Finally, an additional doctor at a franchised facility is correlated with fewer patients serviced (-8.6) than an additional doctor at a non-franchised facility. Therefore, the triple interaction term, Franchise*Clinic*Doctors, indicates that, for non-clinical patients, the addition of a doctor at a franchised clinical facility ($12.4 + (-39.6) + (-8.6) + 83.7 = 47.9$) is correlated with 35.5 more patients serviced than the addition of a doctor at a non-franchised clinical facility (12.4).

Table 7: Regressions on total clients receiving non-clinical services

Variable	#1	#2	#3	#4	#5
Doctors	19.5 (4.57)	22.5 (5.13)	12.5 (2.73)	12.4 (2.72)	10.0 (2.09)
Clinsupport	2.3 (0.90)	2.0 (0.80)	0.8 (0.30)	0.8 (0.30)	0.6 (0.22)
Adminsupport	21.3 (2.60)	20.7 (2.54)	14.9 (1.81)	14.9 (1.81)	14.6 (1.78)
Pharmacy	13.5 (5.36)	12.7 (4.99)	16.5 (6.16)	16.4 (6.15)	13.9 (4.42)
Traditional	-1.7 (-0.58)	1.4 (0.46)	2.5 (0.69)	2.5 (0.70)	2.0 (0.55)
Other	8.9 (2.97)	7.7 (2.55)	7.1 (2.42)	7.1 (2.42)	6.2 (2.08)
Clinic	-42.6 (-7.31)	-55.0 (-7.62)	-57.7 (-7.21)	-57.6 (-7.21)	-59.1 (-7.62)
Urban	2.8 (0.39)	-0.2 (-0.03)	-4.2 (-0.59)	-3.9 (-0.55)	-2.3 (-0.30)
Franchise	-	-24.8 (-2.89)	-43.3 (-3.00)	-39.6 (-2.67)	-62.1 (-2.18)
Fr*Doctors	-	-	63.0 (4.82)	-8.6 (-0.26)	69.7 (5.33)
Fr*Clinsupport	-	-	40.8 (3.91)	42.0 (1.15)	41.2 (3.64)
Fr*Adminsup	-	-	7.2 (0.23)	-53.0 (-0.57)	11.8 (0.38)
Fr*Pharmacy	-	-	-27.0 (-3.38)	-21.2 (-1.68)	-26.0 (-2.53)
Fr*Traditional	-	-	4.4 (0.65)	2.8 (0.41)	5.8 (0.73)
Fr*Other	-	-	32.9 (0.98)	28.5 (0.85)	46.1 (0.83)
Fr*Clinic	-	-	-27.2 (-1.04)	-39.5 (-1.11)	-
Fr*Clin*Doctors	-	-	-	83.7 (2.34)	-
Fr*Clin*Clinsup	-	-	-	-5.9 (-0.16)	-
Fr*Clin*Adminsup	-	-	-	58.0 (0.59)	-
Fr*Clin*Pharm	-	-	-	-8.7 (-0.54)	-
Fr*Clin*Trad	-	-	-	11.6 (0.45)	-
Fr*Clin*Other	-	-	-	0.0 (0.00)	-
Small Staff	-	-	-	-	-13.3 (-1.40)
Fr*Small	-	-	-	-	21.3 (0.56)
Fr*Small*Doctors	-	-	-	-	-43.6 (-1.25)
Fr*Small*Clinsup	-	-	-	-	76.1 (1.59)
Fr*Small*Adminsup	-	-	-	-	0.0 (0.00)
Fr*Small*Pharm	-	-	-	-	10.2 (0.39)
Fr*Small*Trad	-	-	-	-	-2.5 (-0.16)
Fr*Small*Other	-	-	-	-	-18.1 (-0.26)
Fr*Urban	-	-	-	-	-49.9 (-1.76)
Constant	70.7 (11.70)	82.7 (11.30)	87.1 (11.21)	87.0 (11.20)	100.9 (7.83)
N	1330	1330	1330	1330	1330
R ² Adjusted	0.108	0.113	0.170	0.171	0.171

*In the above table, all coefficient estimates are included with the t-statistic in parentheses.

Reverse Causation Concerns:

Table 8 presents the mean values for thirteen variables not included in the initial regressions that are used to address reverse causation concerns (efficiency causes franchise membership). While these variables indicate that there are some differences between franchised and non-franchised facilities, these differences are not large. Additionally, the differences between franchised and non-franchised facilities are not always in the same directions from variable to variable (i.e. more franchises have an incubator while more non-franchised facilities have an ultrasound).

Table 8: Summary statistics for variables used to address reverse causation concerns

Variable	Franchised Facility	Non-Franchised Facility
Year facility opened	1993.77 (322)	1991.15 (990)
Facility approved to provide abortions	18.04% (316)	14.17% (988)
Year facility began providing family planning services	1995.30 (323)	1992.39 (1004)
Does the facility have:		
Major operating theater	9.29% (323)	9.05% (1005)
Minor operating theater	13.00% (323)	12.52% (1006)
Ultrasound	1.55% (323)	2.19% (1006)
Newborn incubator	1.86% (322)	1.79% (1006)
Telephone	29.81% (322)	26.25% (1002)
What type of record keeping does the facility use:		
Client record/card	5.57% (323)	8.57% (1004)
Client register	18.58% (323)	26.12% (1003)
Informal notebook	20.43% (323)	13.27% (1002)
Other type of client record	2.08% (288)	2.70% (925)
Does not maintain client record	58.97% (312)	59.50% (958)

*In the above table, the means of each variable are provided with the total number of observations in parenthesis. The percentage variables indicate the percent of facilities answering “Yes” to the variable in question.

Quality Concerns:

Additional regressions are run to evaluate if franchising is correlated with a change in client perception as the number of clients serviced by a facility increases. Table 9 presents the results of six separate regressions that use a different measure of client perception of the quality of facility service. In each of these regressions, the primary variable of interest is the franchise*clients interaction term.

The coefficient on clients and on franchise*clients is not significant in the regressions where wait time, provider politeness, and staff politeness are the dependent variables. This suggests that, holding the number of staff constant, increases in patients seen are not associated with any significant changes (positive or negative) in patient perceptions of the quality of service by those three measures—and that this holds true both in non-franchised and franchised facilities.

The coefficient on franchise*clients is significant and positive in the regression where “Return”—whether or not the client would return to the facility—is the dependent variable, but the coefficient on clients does not differ significantly from zero. Not only are increases in patients seen (holding staff size constant) not associated with any decreases in patients’ willingness to return to the facilities, they are actually associated with *increases* in that willingness, in franchised facilities only.

The remaining two indicators—facility quality and overall satisfaction—are measured on a scale of 1-5 with 1 being the most favorable and 5 being the least favorable. Thus positive associations with these variables represent declines in quality. The clients variable is not significant in these regressions, while the coefficient on

franchise*clients is significant and negative. This suggests that, holding staff size constant, increases in the number of patients seen are associated with no change in these two quality measures in non-franchised clinics, and actually associated with *increases* in observed quality in franchised clinics. There is no evidence that these two measures systematically worsen in association with increases in patients seen, in or out of the franchise.

Table 9: Regression on several indicators of client perceptions of health care quality

Variable	Dependent Variables					
	Wait	Provpolite	Staffpolite	Return	Thisbetter	Satisfactory
Franchise	6.99 (4.54)	-0.10 (-2.25)	-0.07 (-1.37)	0.07 (2.99)	-0.04 (-0.78)	-0.05 (-1.37)
Total Clients	-0.00 (-0.36)	-0.00 (-1.00)	-0.00 (-0.28)	0.00 (0.71)	0.00 (1.26)	-0.00 (-0.35)
Franchise * Clients	0.00 (0.70)	-0.00 (-1.56)	-0.00 (-1.48)	0.00 (2.49)	-0.00 (-3.37)	-0.00 (-2.30)
Doctors	4.63 (5.86)	-0.00 (-0.22)	0.01 (0.25)	0.01 (0.42)	0.01 (0.38)	0.01 (0.48)
Clinical Support	0.29 (0.73)	0.03 (2.62)	0.02 (1.60)	0.01 (2.38)	0.02 (1.82)	0.01 (0.66)
Admin Support	-5.39 (-2.96)	0.03 (0.50)	0.02 (0.29)	-0.04 (-1.38)	0.04 (0.74)	0.02 (0.38)
Pharmacy	2.72 (6.84)	0.02 (1.46)	0.01 (1.00)	0.01 (1.86)	-0.02 (-1.16)	0.00 (0.08)
Traditional	-0.99 (-1.95)	-0.00 (-0.31)	0.01 (0.34)	0.01 (1.56)	-0.01 (-0.51)	0.00 (0.39)
Other	-0.47 (-1.04)	-0.01 (-0.86)	0.00 (0.04)	-0.00 (-0.32)	-0.02 (-1.26)	-0.02 (-1.45)
Clinic	10.20 (8.46)	-0.04 (-1.16)	-0.05 (-1.20)	0.01 (0.70)	-0.03 (-0.88)	-0.01 (-0.47)
Urban	6.23 (5.16)	0.05 1.51	0.07 (1.68)	-0.01 (-0.40)	0.00 (0.02)	0.01 (0.33)
Constant	0.73 (0.61)	1.62 (48.73)	1.68 (39.96)	0.14 (7.44)	1.72 (43.23)	1.70 (59.45)
N	1048	1048	811	1048	1045	1045
R ² Adjusted	0.258	0.031	0.016	0.049	0.014	0.007

*In the above table, all coefficient estimates are included with the t-statistic in parentheses.

Discussion

The regressions presented in the previous section result in a failure to reject the hypothesis that the efficiency of an SRH service provider that is part of a social franchise network is greater than that of other SRH providers. Holding constant the observable clinic traits considered here, the addition of one more doctor or clinical support staff (such as a nurse) to a Janani franchise member clinic is associated with a larger increase in the number of patients seen than the same addition in a non-member clinic. Similarly, the regressions on client perceptions of quality result in a failure to reject the hypothesis that increases in efficiency—as measured in the number of clients serviced—occur without corresponding declines in the quality of care as perceived by patients. As the number of clients increases, client perceptions of quality at franchised facilities are either the same as or better than client perceptions of non-franchised facilities. This analysis fills two gaps in the literature on franchising: it provides a quantitative analysis on the efficiency correlates of social franchising in a developing country and it demonstrates that some staff at franchised clinical SRH facilities are more efficient (by the narrow definition of the number of patients seen) than staff in non-franchised SRH facilities.

The increase in efficiency could be due to several of the previously stated benefits of franchising. First, the increased efficiency could be due to an appropriate alignment of incentives between the individual facility and the Janani organization. Second, the increased efficiency could be due to economies of scale: membership in the Janani network could be reducing the cost of supplies and marketing efforts. Finally, the increased efficiency could be due to the standardizing of procedures and/or training:

Janani provides ongoing training to doctors and support staff. While this analysis has evaluated the efficiency of franchised SRH providers, it has not attempted to determine the underlying causes of an increase in the efficiency of a franchised SRH provider.

While the results from this analysis lead to a failure to reject the hypothesis, other explanations of the results are plausible. The problem of selection bias remains. It is possible that only facilities with the most efficient doctors and/or the most efficient clinical support staff are the facilities being selected to become franchises. Additionally, as indicated by the decrease in patients serviced by pharmacy staff at franchised facilities, it is possible that the most efficient pharmacies/medical stores are opting out of franchise membership because they are already operating efficiently and do not see the need to join a franchise in order to increase efficiency. Finally, another concern preventing a complete acceptance of the hypothesis is the possibility that the model is not the correct model. The proposed model could be poorly specified and therefore might not be capturing the correct aspects of the effect of franchising on the efficiency of providing SRH services. Table 8 addresses concerns about reverse causation by comparing characteristics of franchised and non-franchised facilities that were not included in the original regressions. The similarity of observable traits between franchised and non-franchised clinics suggest that systematic differences in unobservable traits are not likely to be large enough to substantially bias the results shown here. Such concerns, of course, cannot be completely dismissed until facilities are randomly assigned to two groups, franchise and non-franchise, and then compared for efficiency changes.

While the results of this analysis do not lead to a rejection of the hypothesis that franchising increases the efficiency of SRH providers, and it fills some of the gap in the literature, additional analysis needs to be conducted in order to address several concerns that have been mentioned. First, the question of why the efficiency of doctors and clinical support staff at franchised facilities is higher than that of similar staff at non-franchised facilities needs to be addressed. Specifically, whether or not the increased efficiency is due to aligned incentives, economies of scale, or some other benefit of franchising should be addressed. Additionally, the concern about selection issues—whether or not the facilities with more efficient doctors and clinical support staff are facilities choosing to become franchises and whether or not the more efficient pharmacies/medical stores are opting not to become franchises—needs to be analyzed. Finally, this analysis does not address numerous other important questions concerning the impact of franchising on the health care system in India such as whether or not franchising increase health care coverage or improves the quality of care per se, independent of any possible effects on patient throughput alone. These concerns should be evaluated before any significant policy decisions are made regarding the franchising of SRH facilities.

Conclusion

While there are numerous questions and issues that need to be addressed regarding the impact of franchising on SRH services, the results of this analysis do provide some initial direction for policy makers. The results indicate that the efficiency of doctors and clinical support staff at servicing clients is greater at franchised SRH

facilities than non-franchised clinics. Therefore, policy makers might consider programs to encourage facilities that have doctors and clinical support staff to consider franchising. Additionally, since the number of patients being serviced at franchised facilities increases with the addition of a doctor and/or a clinical support staff person, policy makers might consider programs to increase the number of doctors and clinical support staff. This effort could be two-fold. First, a thorough evaluation of existing facilities to determine need could be conducted. Once this analysis is complete, programs could be implemented to increase the number of people training to become doctors and/or clinical support staff. Based on the evaluation of existing facilities, another program could facilitate placement of the appropriately trained staff in the facilities that would benefit the most. This initiative could be combined with other proven policy interventions to increase the reach and quality of health care facilities such as additional training, monitoring, accreditation, or voucher programs. In the areas where social franchising is not correlated with increased efficiency (i.e. pharmacies), policy makers should conduct a study to determine the causes of these inefficiencies (public policies hindering private enterprise, lack of awareness, funding issues, etc.) so that targeted interventions alleviating these inefficiencies can be implemented. Finally, other areas of health care provision should be compared to sexual and reproductive health care services for similarities, specifically in staffing types, in order to determine whether or not social franchising would prove to be as effective and, therefore, implemented.

Regardless of the approach policy makers take, the goal should be to improve health care services throughout India by expanding the existing system while ensuring

that the quality of care improves. By focusing on efficiency, measured in terms of the number of patients serviced at SRH facility, this analysis has attempted to provide an insight on how to expand the existing system. While there are numerous questions that remain to be answered, this analysis indicates that, given some specific conditions, SRH facilities may benefit from membership in a franchise organization. As a result, policy makers might want to devise systems to facilitate these conditions and encourage franchise membership when these conditions are met.

References

- Alternative Business Models for Family Planning. Website Accessed 2 Nov. 2007:
www.cpc.unc.edu/projects/abm.
- The David and Lucile Packard Foundation. Website Accessed 2 Nov. 2007:
www.packard.org.
- Berman, Peter A. "Rethinking Health Care Systems: Private Health Care Provision in India." World Development 26.8 (1998): 1463-1479.
- Bhatia, Jagdish, and John Cleland. "Health care of female outpatients in south-central India: comparing public and private sector provision." Health Policy and Planning 19.6 (2004): 402-409.
- Bhat, Ramesh. "Characteristics of private medical practice in India: a provider perspective." Health Policy and Planning 14.1 (1999): 26-37.
- Greenstar. 2006. Greenstar. 2 Feb. 2007 <www.greenstar.org.pk>.
- Janani. 2007. Janani. 1 Feb. 2007 <www.janani.org>.
- Jones, Barbara J. and Richard V. Moore. "Social Franchising Health Services: A Philippines Case Study and Review of Experience." John Snow, Inc. 2003.
- Kikumbih, Nassor, Kara Hanson, Anne Mills, Hadji Mponda, and Joanna Armstrong Schellenberg. "The Economics of Social Marketing: The Case of Mosquito Nets in Tanzania." Social Science & Medicine 60 (2005): 369-381.
- Kotler, Philip, and Gerald Zaltman. "Social Marketing: An Approach to Planned Social Change." Journal of Marketing 35.3 (1971): 3-12.
- Kruk, Margaret Elizabeth, and Lynn P. Freedman. "Assessing health system performance in developing countries: A review of the literature." Health Policy (2007).
- LaVake, Steven D. "Applying Social Franchising Techniques to Youth Reproductive Health/HIV Services." Family Health International. 2003.
- Mills, Anne. "Improving the Efficiency of Public Sector Health Services in Developing Countries: Bureaucratic versus Market Approaches." U.K. Department for International Development, Health Economics and Financing Programme. 1995.
- Montagu, Dominic. "Franchising of health services in low-income countries." Health Policy and Planning 17.2 (2002): 121-130.

- Mukherji, Srimoti. Healthcare Indicators: India, 2005. [New Delhi, India:] Department of Commerce, The U.S. Commercial Service in India. 2005.
- Prata, Ndola, Dominic Montagu, and Emma Jefferys. "Private sector, human resources and health franchising in Africa." Bulletin of the World Health Organization 83.4 (2005): 274-278.
- PriceWaterhouseCoopers. "Economic Impact of Franchised Businesses." International Franchise Association Education Foundation. 2004.
- Smith, Elizabeth, Ruairi Brugha, and Anthony Zwi. "Working with Private Sector Providers for Better Health Care: An Introductory Guide. London School of Hygiene and Tropical Medicine. 2001.
- Smith, Janet M., Rob Ritzenthaler, & Elizabeth Mumford. "Policy Lessons Learned in Finance and Private Sector Participation." Policy Project, Working Paper Series #2 (1998).
- Stephenson, Robert, Amy Ong Tsui, Sara Sulzbach, Phil Bardsley, Getachew Bekele, Tilahun Giday, Rehana Ahmed, Gopi Gopalkrishnan, and Bamikale Feyesitan. "Franchising Reproductive Health Services." Health Services Research 39 (2004): 2053-2080.
- Suraratdecha, Chutima and Albert A. Okunade. "Measuring operational efficiency in a health care system: A case study from Thailand." Health Policy 77 (2006): 2-23.
- United Nations. Development Programme. Human Development Report 2007/2008. New York: United Nations, 2007.
- United Nations. UNAIDS. Social Marketing: Expanding access to essential products and services to prevent HIV/AIDS and to limit the impact of the epidemic. Geneva: United Nations, 2000.
- Varatharajan, D. "Public Sector and Efficiency: Are they Mutually Exclusive." Journal of Health and Population in Developing Countries (2003).