MEASURING THE IMPACT OF NGOs:
THE EFFECT OF NGOs ON HEALTH OUTCOMES

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ABSTRACT

There seems to be an emerging consensus that NGOs can play an important role in poverty alleviation, the promotion of human rights and women’s issues, education and health. These activities, in turn can have a substantial impact on development. However, it is unclear if the true “impact” on society is understood. By the vary nature of the work they do and the locations in which they operate, evaluating NGOs based their performance and measuring outcomes can be difficult. Yet, evaluating the role of NGOs to determine their effectiveness and where these types of organizations are most appropriate and or are ineffective can be very useful for policy formulation, particularly concerning development. In order to quantitatively analyze the impact of NGO activity, this study uses health outcomes as a measure of NGO performance. Using health outcomes as a measure of NGO performance can be particularly useful due to the importance of health outcomes themselves and the concentration of NGO activity in that sector. This study finds positive and statistically significant relationships between NGO activity and health outcomes.
“People, as part of civil society, form the core of health systems. They use health services, contribute financing, are care givers and have a role in developing health policies and in shaping health systems. In all these respects, there is growing pressure for public accountability and increased response to inputs from civil society. The manner in which the state responds to these changes and the extent to which civil society actors are recognized and included in health policies and programs, are some of the critical factors determining the course of public health today.”

-World Health Organization, Civil Society Initiative (3).
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INTRODUCTION AND TERMINOLOGY

Non-profit organizations, the roles they take and impact they have in the communities in which they operate, are an emerging topic in many areas of both national and international policy. Non-profits operate in an array of fields around the world from health services, environmental protection, the arts, and other social service delivery. One of the major topics surrounding international policies is that of development. NGOs have emerged as a mechanism to deal with issues of development and to promote the needs of various populations. Specifically, NGOs are becoming a viable option for development activities. The activities occur at the grassroots level and through international efforts, and involve activities ranging from fighting hunger and poverty, to promoting human rights, women’s issues, education and health.

There seems to be an emerging consensus that NGOs can play an important role in many of these areas, which in turn has an impact on development. However, it is unclear if the true impact is understood. By the vary nature of the work they do and the locations in which they operate, evaluating NGO programs based on performance and measuring their true influence on outcomes can be difficult. However, by understanding the actual impact of such organizations policies can be more effectively drafted to promote development. Evaluating the role of NGOs to determine the effectiveness of these organizations and where these types of organizations are most appropriate and or are ineffective can be very useful for policy formulation. In other
words, knowing the strengths and weaknesses of these organizations can help us understand the role that they should take in the future.

The term “non-governmental organization” is widely used and there seems to be a general consensus that NGO activity in development has increased (Macdonald 1997; Gellert 1996; Green and Mathias 1997; Brown and Korten 1991). However, there is no clear definition describing exactly what constitutes a non-profit. In order for policies regarding non-profit organizations to be effectively created, implemented and analyzed it is important to understand exactly which organizations are being referenced. The extent of activities, organizational structure, goals and capabilities vary drastically within the sector and by region, so establishing one definition or group of organizations proves extremely problematic.

“Non-governmental Organizations”, “Non-Profits,” “Civil Society Organizations”, “Voluntary Organizations” are all terms that reference organizations that operate in this emerging sector. Yet it is also important, if not more important to understand that while the non-profit sector is increasingly considered a “third sector” that operates between the public (government) and private (business) realms, it is increasingly becoming hard to define. Some non-profits operate autonomously from both government and business relying on fee for service or donations. Others partner with and operate primarily on government contracts. Still others operate under some mix of the two. The implication of these many different operating models, is that it
becomes progressively more difficult to analyze the effectiveness of “non-profits” because their range and scope of activity varies so drastically.

One way to categorize non-profits or NGOs is to look at them by level of operations. NGOs can be thought of as operating at three levels. First, there are those organizations that operate primarily at the local level, providing services on a relatively small scale for local community interests. Secondly, there are larger organizations that operate on a national level, within one country. Lastly, there are those organizations that operate on a large scale and international level. These organizations are often referred to as INGOs. While making these distinctions helps to evaluate the sphere of influence of these organizations, defining where “operation levels” truly begin and end can also be difficult. For instance, a program designed to help a local community may grow to have a national impact. Likewise, international programs can have substantial effects on small communities.

As such, Brown and Korten (1991) have categorized NGOs in a different manner: by the type of activity. They suggest that NGOs operate as organization that provide either service delivery, act as development catalysts, provide sector support and networking functions, or serve as public service contractors or people’s organizations. While it is important to identify the types of activities and behavior of NGOs it is also reasonable to assume that many organizations hold more than one of these roles.
While the exact definition of NGOs may be ambiguous and variations are likely to exist between regions and countries, for the purposes of this paper Green and Mathias’ (1997) definition of NGOs seems to be most suitable for thinking about these organizations. NGOs are “formal organizations which have corporate objectives concerned with humanitarian aims, concerning groups outside the organization, which are non-profit making and which are outside the direct control of government.” Therefore, the terms NGO, non-profit, CSO, and voluntary organizations will be used interchangeably to reference organizations operating in this way.

As noted above the role of “the third sector” in development is becoming widely recognized. At the same time the importance of health in development is becoming apparent. The relationships between health and economic, political and social development are extremely important. For example, programs designed to improve education or reduce employment may have limited effects if children are too ill to go to school or adults are too sick to work. Furthermore, the burden of health costs that can be associated with a chronically ill population can hinder a country’s ability to use those resources elsewhere.

Health outcomes have become a useful measure for analyzing the effectiveness of a country’s ability to care for its citizens. In fact, quite a few health indicators such as under-five mortality rate, infant mortality rate, proportion of one-year-old children immunized against measles, proportion of births attended by skilled health personnel
have been incorporated into the Millennium Development Goals, the United Nations benchmark of how a country is progressing towards achieving development.ii

Measuring the impact of NGOs is difficult, and this is true of NGOs operating within the health sector as well. Furthermore, much of the examination of NGOs in health involves the examination of the role of NGOs in a particular country, for a specific cause. While these examples demonstrate previous success and show improvements in public health, there seems to be a lack of quantitative analysis regarding the overall impact of NGOs on health outcomes and basic determinants of health.

For these reason, it is possible to evaluate the performance of NGOs by examining the impacts they have in the health sector. With recent improved efforts at measuring health data it is possible to quantatively evaluate the impact of NGOs. Using health outcomes as a measure of NGO performance can be particularly useful due to the importance of health outcomes themselves and the concentration of NGO activity in that sector. This paper hypothesizes that NGO activity has a positive effect on health outcomes.
LITERATURE REVIEW

Considering the scope and aim of this paper, relevant literature can be separated into three categories: NGO Activity; International Public Health; and Methods for Measuring the Factors that Impact Public Health.

Literature on NGO Activity

NGOs are being increasingly utilized in the developing world. However, the proper role they should play and the relationship that should exist, between the “nonprofit sector,” governments, and society is unclear. The growth of the nonprofit sector in development is a widely documented and discussed issue in the non-profit literature (Korten 1991; MacDonald, 1997; Green, 1997; Edwards and Hulme 1998; Paul 1991, Jack 2001). For instance, Jack (2001) points out that Uganda has more non-profits in operation than for-profits and the World Bank increased the number of NGO supported projects from 20 percent in 1989 to 46 percent in 1997.

It is important to consider the reasons for such an increase in the application and utilization of the non-profit model. Due to the complex nature of the NGO sector, the WHO discusses these issues in the context of “civil society,” and refers to organizations that operate within this sector as Civil Society Organizations (CSOs). The World Health Organization’s Civil Society Initiative (CSI) suggests that the primary increase in NGO activity stemmed from an ideological shift in the concept of development (CSI 2001). The establishment of the Millennium Development Goals
demonstrates this shift, specifically because it represents a commitment on behalf of the “international community to an expanded vision of development, one that vigorously promotes human development as the key to sustaining social and economic progress in all countries, and recognizes the importance of creating a global partnership for development.” As the human element of development, have recently been emphasized over economic and business interests, social exclusion then becomes viewed as a mechanism that perpetuates under development. It is therefore important that civil society is able to organize and form movements focusing on the entitlements of different groups in society, thereby mitigating the affects of social exclusion (CSI 2001).

A second reason for an increase in civil society activities is that declining resources have been mirrored by declining service provision by the state, which has increased the gap of unmet need for civil society to fill (CSI 2001). Edwards and Hulme (1998) discuss the increase of NGO activity by examining the interrelationship between public, private and NGO governance. They suggest that a “New Policy Agenda” has been utilized by donors of development aid that focuses on financing NGOs in order to achieve such aims as poverty alleviation and the development of civil society. Previously, funds aimed at these types of goals were largely given to the state. While the exact government and donor policy focuses may differ by country and region, they suggest that two themes are consistent throughout donor agencies.
The first is that economic markets are seen as efficient means for producing services and achieving growth. This theme embraces the attitude that “imperfect market” provision is preferable to “imperfect state” provision (Edwards and Hume 1998; Meyer 1992; Sollis 1992). Although NGOs and other civil society agents have long provided service delivery (i.e. churches providing education or health services) this was done out of a lack of a viable alternative or due to an inability of the state to provide such functions. However, this new trend sees NGOs as the preferred mechanism for efficient service delivery (Edwards and Hulme 1998). The second theme that is apparent in the New Policy Agenda is that NGOs are preferable because they represent democratization and an emerging civil society (Edwards and Hume 1998; Moore 1993; Healy and Robinson- 1992). This theme supports the idea that supporting these groups supports the legitimacy of development efforts and encourages self-determination.

Finally, Edwards and Hulme (1998) suggest that the basis for this New Policy Agenda is ideological and not empirical. In fact, they hypothesize that this new trend in official funding will have the following affects. First, NGOs will be encouraged to become service providers. Secondly, the shift towards service provision will come at the expense of their performance in other areas of development such as institutional development and advocacy. Next, the legitimacy of NGOs will be weakened as they become less independent, relying on contracts for service delivery. Lastly, accountability will shift away from the community and there will be an emphasis on
short-term outputs. These results have the opposite of the desired effect when utilizing the nonprofit sector. What these hypotheses suggest is that there is a greater need for policy to be rooted in quantitative analysis and be geared towards utilizing the abilities of NGOs.

Korten (1991) evaluates the historical evolution and importance of the emergence of NGOs in international development and development aid. For example, he demonstrates that voluntary activity at the international level is not a new phenomenon. He states that as far back as 1647 Irish Protestant groups sent food to settlers in North America dealing with the Indian Wars and in the late 1700s private American organizations sent assistance to refugees during a revolution in Santo Domingo. The American Red Cross, which was founded in 1881, has provided large amounts of international aid relief for many years throughout the world. Other aid organizations were formed around the world, notably in Europe, in response to World Wars I and II and implemented recovery efforts. In fact, Korten points out that many of the organizations that now offer assistance in developing countries, such as Oxfam and Catholic Relief Services, were founded in response to post World War II issues.

Korten (1991) outlines the approaches towards international assistance taken by organizations after WWII, and how these approaches in turn dictate current NGO activities. Official development aid was first channeled through NGOs in the 1950s by the United States, followed by Australia, the Netherlands, Norway, Canada, Germany and Sweden in the 1960s. The four approaches taken by these organizations receiving
this influx of aid were: relief and welfare activities; human resources development; political activism or empowerment activities; and policy advocacy.

Organizations that currently focus on relief and welfare participated in activities such as immediate relief and food assistance. Those organizations that focus on human resource development recognized a need for building skills and capabilities in order to sustain improvements and utilized tools such as micro-enterprise development. Organizations, which viewed political activism as a tool for development, focus on the idea that with development should come self-reliance and self-determination of communities to organize and govern themselves. Lastly, advocacy organizations employ policy advocacy as an important strategy to initiate power structure changes. Such structural changes may be needed to have lasting impacts on development and humanitarian issues. If political environments change, funding options and other regulatory issues may arise, which may be problematic for NGO operations. Remaining involved in policy development proves useful to create sustainable changes. Depending on how these organizations responded to post World War aid, in part, dictates how they operate and the activities that participate in today.

It is also important to recognize how NGOs have developed in various political environments because different political environments allow NGOs to operate in different ways. Relations with community, business, and government alter the ability of NGOs to start, organize, and implement programs. Korten (1991) demonstrated such regional variations in the activity of NGOs. For instance, Latin American NGOs
tend to be more politically active than others, while, Asian NGOs tend to cooperate more with government. In contrast, African NGOs have focused on service-delivery. This demonstrates the flexibility of the non-profit sector to respond to local conditions. Differing political environments also show some fundamental differences that exist between developing and developed countries (Paul 1991). In developing countries organizations tend to be smaller with less skilled staff and resources, and links with international donors and governments tend to be more important to operations. These differences further demonstrate the complexities of adopting uniform policies regarding NGOs, as their skills and capabilities vary dramatically.

It seems then there are some benefits to utilizing NGOs in development as well as some dangers in embracing NGO promoting-policies too readily. The question then becomes: is there a basis for the existence of NGOs beyond that of self-preservation? In other words, is there proof of a foundation for the existence of NGOs in that they can provide something unattainable in their absence?

In fact, the economic rational for NGOs has been evaluated and the economic theories behind the emergence and justification for the non-profit sector have been covered in relevant literature (Paul 1991, Hansmann 1987, Rose-Ackerman 1986, Benner 1986). Subsidy theory treats the presence of the non-profit sector NGO as a response to subsidies allocated by the state. State sanctioned goals or activities such as hunger alleviation, health and education are promoted by special tax status of non-profit organizations and donations to them.
Public goods theory sees the role of NGOs stemming from a need to fulfill society’s unmet demand for public goods. In this model excess demand is considered to be services not provided by the state. The excess demand is a result of the fact that the state tends to provide only what the “median” voter wants and NGOs act as a mechanism to provide these goods independent of government provision.

Contract theory provides rational for NGOs on the basis that the public does not always have the means to “police the producers.” In this scenario, for-profit firms have incentive to exploit consumers. NGOs, which are presumed to not be profit motivated, are preferable within industries where it is difficult to measure outputs or define contracts, as in disaster relief (Paul 1991).

Under the assumption that NGOs are justified by economic theory, the potential comparative advantages that the NGO sector should be explored (Brown and Korten 1991; Gellert 1996: Paul 1991). Interestingly, the benefits and advantages of NGOs are also some of their limitations. Gellert (1996) further lists strengths of NGOs as ability to reach the poor, strong local involvement, being cost effective, adaptive, independent, and providing sustainable change. He identifies the areas that NGO activity can be most effective based on these attributes.
Brown and Korten (1991) suggests the

“comparative advantage of NGOs lie in their ability to innovate, to adapt to local conditions, and to reach and to work with the poor. These positive features are a function of their basic values, special skills, small size, limited resources, flexibility, and freedom from political constraint. There weaknesses stem from some of the same characteristics-particularly their value commitments, small size, independence and administrative flexibility.”

-Brown and Korten (1991)

In other words some of the fundamental characteristics of NGOs serve as both advantages and disadvantages. For example, being small in size allows them to access hard to reach populations, but also places limitations on the scope of activities a given NGO can undertake.

Paul (1991) also discusses some of the advantages and disadvantages of NGOs in the context of some pros and cons of utilizing NGOs as partners for world banks projects. The benefits included that NGOs have skills and experience in identifying community needs and promoting community participation; they articulate and make forceful contributions to policy reform; they provide cost effective delivery of services to vulnerable and inaccessible groups; they have demonstrated long term commitment to development issues; and they participate in strong advocacy on behalf of disadvantaged groups. Some of the disadvantages were found to be that advocacy roles can be antagonistic to working relationships with government; NGOs have a tendency to focus on local issues, and are less sensitive to macroeconomic issues that affect the policy environment; inter-NGO relations are often hostile and counter productive to partnerships with each other; and there are limited financial and managerial resources.
One important beneficial aspect of the NGO sector is that NGOs, as a part of civil society, can have economic and social benefits beyond that of their immediate sector of activities (Schafer 1999; Shandra 2001; Boli and Thomas 1997; Gellert 1996). For instance, Project HOPE, which focuses on the transport and delivery of health care supplies and provides health education to health professionals, became involved income generating activities. Project Hope saw the positive health benefits that were associated with increased income and therefore increased their range of activity beyond that of traditional health provision services. Further spillover effects occur because in “addition to facilitating development, INGOs help set international standards in trade and industry, consult with national governments and intergovernmental organizations, hold international conferences, and maintain active developmental programs in developing nations.” viii

Despite these evaluations of the advantages and disadvantages of NGOs, the NGO literature currently focuses on individual cases and analyses of the NGO as a sector is lacking (Paul 1991). While there is an array of normative discussion in the literature about the roles and potential utilization trends of NGOs, there is almost no quantitative analysis of these issues (Edwards and Hulme 1998; Paul 1991, Jack 2001). The lack of these types of analyses could be in part due to the lack of data and the difficulty in defining the boundaries of activities of such organizations.
In addition to growing discussion regarding NGOs in development there is also substantial literature discussing the importance of international public health and health in social, political and economic development (Green 1992, Green and Mathias 1997; Gellert 1996, Hecht 2004; CSI 2001; Akukwe 1998; Phillips and Verhasselt 1994).

Gellert (1996) evaluates the current status of international health. The health problem traditionally associated with the developing world is generally considered to be the “burden of infectious disease.” In fact, half of the deaths in developing world can be attributed to infectious or parasitic diseases. Additionally, Gellert demonstrates that the burden of infectious disease, normally associated with the developing world, is now being supplemented by chronic diseases normally associated with developed countries, with about 3.5 million of the 7 million new cases of cancer each year are from the third world. This shift in public health status must be considered when assessing international public health status and analyzing potential health promoting policies.

Green and Mathias (1997) discuss in depth the role of the public and private sectors in health service delivery. Services provided by the public sector are generally considered to be those provided by the government, and in most countries health is still distributed by the Ministry of Health. Even if the actual delivery of care is passed on to lower levels of government these efforts are usually coordinated by the Ministries of Health or corresponding institution. Green and Mathias affirm government provision
of health is justified by the view of health as a type of “right.” Due to the importance of healthy populations, the state has an interest in insuring that health is provided in a manner that serves larger social interests and not those of smaller self-interested parties, such as medical providers. Private sector service delivery is considered to be those activities performed by both the for-profit and “voluntary” sectors. Green and Mathias suggest that health professionals are increasingly choosing to work in the private for-profit sector and the demands from the middle class (however proportionally small it may be) cause private sector health provision to become increasingly more important.\textsuperscript{xi} These organizations can be differentiated from those within the “voluntary” sector in that they operate on a for-profit basis.

The current principles in the public health school of thought are rooted in the Alma Alta Declaration of 1978. This declaration was a formal recognition of the importance of health by ministers of health from around the world and a commitment from these ministers to “pledge their governments to a strategy to improve the health of their citizens.”\textsuperscript{xii}

Green and Mathias (1997) outline the major themes imbedded in the Alma Alta declaration. This first theme in the strategy recognized the links between ill health and under-development and specifically with poverty, high illiteracy levels, and poor infrastructure (access to water and sanitation). The identification that these are the “major factors underlying the appalling health status of many developing countries,”\textsuperscript{xiii} allows for the policy formulations targeted at solving these problems.
The second theme focused on inequalities that exist between and within countries as a root of poor health outcomes by acknowledging that the resources available to those at highest groups in society far exceeded those available to lower groups. The third theme found within the Alma Alta Declaration was the need to use health resources in a more efficient way. Using resources to provide basic and preventative care could have far greater public health benefits than expensive “curative” care. Finally, the declaration emphasized that in order for health service programs to be effective and sustainable the communities themselves need to be involved in coordination and decision-making. It is important to note however, that the state was still assumed to be the largest agent in the promotion of health.xiv

Since this declaration was established there have been developments in international public health the effect health provision and created opportunities for NGOs. The World Health Organization evaluated trends that occurred during the 1990s and explains that health reforms during that time de-emphasized the role of the state in health care provision. Particularly in developing countries “coverage to the lowest income social groups fell, leaving many people cut off from effective services and dependant on self-help. These trends motivated many CSOs (civil society organizations) to new actions including health service delivery and renewed advocacy for basic health rights and access to health resources.”xv

Hecht (2004) describes the trend towards performance based funding health in developing countries. Performance based funding is based on providing money for
organizations and programs contingent upon on demonstrated success. For instance, government disperses funds to NGOs or private health care providers to deliver health services instead of providing the services itself. Additionally, central governments may disperse funds to local governments based on the strength of local health systems. Another example of performance based funding is donor agencies or countries that provide funding based on achieving health targets.

Hecht (2004) offers three reasons for such a trend. First of all, since there is a global trend towards achieving measurable improvements in development (i.e. the establishment of the Millennium Development Goals) governments have and interest in funding programs that have the potential to demonstrate increases towards those goals. Second, leaders in donor countries are held accountable for the funds they are distributing towards development goals in other countries, demonstrating that progress is being made, by tying funding to measurable results serves as a justification mechanism to constituents. Lastly, tying funding to outputs is a way to ensure that health care providers remain accountable for funds that are given to them to achieve health goals (Hecht 2004).

Performance based funding for health impacts the operations of NGOs in substantial ways. This trend obviously presents numerous opportunities for NGOs to help address public health issues by gaining access to funding. However, it also presents some demands and restrictions upon the traditional NGO model. For instance, many organizations do not have the capacity or resources to track and document
outcomes on a large-scale level. Additionally, if one of the major benefits of the NGO sector is that it allows for local and community involvement and organization, having outcomes and performance be implemented from a top down approach may undermine their legitimacy.

Green and Mathias (1997) point out that while the Alma Alta declaration did not specify a role for NGOs, the underlying themes are conducive to NGO involvement in addressing health care delivery, particularly to the poor and disenfranchised groups. As a result, health is one of the major areas that NGOs operate.

Gellert (1996) indicates that at the same time public health problems have increased, financial contributions are remaining constant, and in some cases are declining. This draws attention to that fact that these gaps in unmet health needs will need to be addressed. He offers that because of the growing disparity in needs and funding, NGOs have been increasingly utilized and depended on to provide these much needed health services.

However, these claims seem to be rooted in the ideology of what NGOs should be able accomplish. Akukwe (1998) discusses the challenges that face NGOs in light of the increasing influence of and dependence on NGOs for health promotion. He concludes that increased global trade will result in the provision of health services to become increasingly a private sector activity. This obviously proves problematic for
the poor. The decrease in state provision of health services results in both the need and opportunity for NGOs to provide these services.

Akukwe also presents some of the problems that countries will have to face when attempting to address the growing and complex unmet health needs of vulnerable populations. A main issue facing countries is that due to, aid funding decreasing from both international aid organizations and donor countries, countries are competing with each other for these resources. He demonstrates that this can have both positive and negative affects. While on one level, competition makes countries more accountable and forces them to implement much need policy changes and infrastructure improvements, it brings with it many of the problems that organizations face when they become “dependent” on a funder for resources. For example, goals of donor organizations may be different than what is best for the country as a whole. Furthermore, Akukwe suggests that donor organizations do not necessarily have the capacity for large and extensive management programs such as those required at a national level.

Counter to Gellert's position, Akukwe suggests that NGOs operating within these countries have yet to demonstrate technical expertise to operate such programs. He even suggests that these NGOs often require expensive consultants, which increases overhead costs, diverting resources that could be used for other health or development activities. The dependability on fluctuating financial sources and
unstable political and economic environments present NGOs with sustainability forces that are difficult to overcome.

<table>
<thead>
<tr>
<th>Health System Function</th>
<th>Sample Civil Society Activities</th>
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| Health Services                         | • Service Provision  
umenting community interactions with services  
• Distributing health resources, i.e. condoms, bed nets  
• Building health worker moral and support |
| Health Promotion and information        | • Obtaining and disseminating health information  
• Building informed public choices  
• Implementing and using health research  
• Helping shift social attitudes  
• Mobilization and organizing health movements |
| Policy Setting                          | • Representing public and community interests  
• Promoting equity and pro-poor policies  
• Negotiating public health standards  
• Building policy consensus, disseminating policy options |
| Resource Mobilization and allocation    | • Financing Health services  
• Raising community preferences in resource allocation  
• Organizing community co-financing of services  
• Promoting pro-poor and equity concerns in resource allocation  
• Building public accountability and transparency in raising, allocating and managing resources |
| Monitoring quality of care and responsiveness | • Monitoring responsiveness and quality of health services  
• Promote equity by giving a voice to marginalized group  
• Represent patient rights  
• Channeling/negotiating patient complaints/claims |

Understanding the basic opportunities and challenges that NGOs face in the area of health promotion and provision, an overview of the health system functions that
NGOs can serve is helpful in order to fully grasp the rationale for the non-profit model in health care. The World Health Organization established the Civil Society Initiative to examine the role civil society can play in both, development and specifically, in public health. Table 1, presented by the Civil Society Initiative, summarizes some of the key health systems functions and sample corresponding civil society activities. Keeping in mind these system functions and activities that can be performed by the non-profit sector is important for policy formulation.

**Literature on Methods for Measuring the Factors that Impact Public Health**

Establishing the importance of health in development and the potential impact that NGOs can have on the health sectors in developing countries, it is important to correctly identify how to best measure “health.” In order to properly evaluate the effect of NGOs it will be necessary to not only identify health relevant outcomes, but the appropriate factors that contribute to the health outcomes in question.

Measuring health and health outcomes has been done extensively and in a variety of methods. As outlined in the Alma Alta declaration the causes of ill health are often socio-economic and lay outside what, in the past was considered the “health system.” It is apparent that in addition to “traditional” or “biological” inputs to health we must consider additional factors that influence the health of populations. Thus, it is necessary to identify not only economic factors that may influence health but he social,

Hill (2003) examines a classic model for the determinants of child survival in developing countries. Scultz’s (1984) study evaluates two models of determining child mortality using prices, available programs, community characteristic, endowments and mother’s education as factors for analysis. The United Nations evaluates five separate studies of statistical assessments of the determinants of health and mortality. They emphasize that health status is determined by a multitude of factors. Wang (1999) provides a model for studying for 6 indicators (health outcomes) as functions of income per capita, education, time and the interactions of these variables to demonstrate country performance. He also outlines a useful methodology and regression results. Pritchett and Summers (1993) stress the importance of income on health, and even suggest the relationship is both causal and structural. They further suggest that the determinants of health such as food, safe water, basic sanitation and shelter are directly affected by income.

Wilkinson (2002) stresses the importance of income distribution inequality in health outcomes and explains that health outcomes are associated with the relative status in society. Egalitarian societies have been shown to have better health outcomes. This has been shown to be a widespread correlation, demonstrated within the United States as well as in developing countries. Detels (2002) analyses the perspectives on the determinants of health and evaluates four views: the biomedical,
lifestyle, socio-economic, and population health views. Additional literature implies that democracy is an important determinant of health status (Lena and London 1993; Shandra 2004). Lena and Bruce (1993) suggest that high levels of democracy are consistently associated with higher health outcomes. Cumulatively, these studies confirm the idea that “health” is a function of all these inputs.

Perhaps the foremost authority on international health, the WHO provides a comprehensive list of appropriate indicators of health. The annual publication World Health Statistics outlines relevant inputs to health and explains “rational for use” for health indicators selected. The WHO categorizes these selected indicators into four general areas: 1) health status/health services coverage, 2) behavior and environmental risk factors, 3) health systems, and 4) general population data.

As noted above, to date there is limited quantitative analysis on the effect of NGOs. This could be in part due to the difficulty in defining the outcomes that are to be measured, as well as quantifying the inputs that determine those outcomes. Schafer (1999) and Shandra (2004) both provide a quantitative analysis evaluating the impact of NGOs. Schafer’s analysis evaluates the role of NGOs in the improvement of third world education. This study demonstrates that the presence of an effective civil society can have positive affects on outcomes associated with development. He uses international organization membership as his measure of NGO activity. Shandra offers an evaluation of the impact NGOs can have on environmental outcomes. He further stresses the importance of NGOs not only for their direct activities but indicates the
presence of NGOs as a measure of democratization and modernization. The level of international nongovernmental organization presence is measured by the number of organizations per capita.

Bichaka (2005) estimates a health production function for countries in Sub-Saharan Africa. Using Grossman’s model of health production and transforming it to a country level analysis they formulate an equation that measures health as a function of economic, social and environmental factors. It is the health production function used by Bichaka, which provides the most useful and complete model for analysis of NGO activity in the production of improved health outcomes.

Given the lack of quantitative analyses on the impacts of NGOs, the established importance of health in development and the increasing roles of NGOs in development, an evaluation of the effectiveness of NGOs in creating positive health outcome is necessary. Based on literature and previous, similar analyses, a health production function including NGO activity and other commonly used determinants of health, will be used to determine if NGOs have a significant impact on health outcomes.
METHODOLOGY

Hypotheses

Health outcomes are likely to be the result of a variety of inputs. The inputs can be grouped into three categories: 1) political and economic inputs 2) social and physical environment 3) health services accessibility and availability. By adding NGO activity to this model we can specify the following health production function:

\[
\text{Health Output} = \beta_0 + \beta_1(\text{Political and Economic Inputs}) + \beta_2(\text{Social and Physical Environment Variables}) + \beta_3(\text{Health Services Capacity and Availability}) + \beta_4(\text{NGO Activity}) + \mu
\]

Thus we can formulate the following null and alternative hypotheses:

\[
\text{H}_0: \beta_4=0 \quad \text{H}_1: \beta_4\neq 0
\]

Given the theoretical benefits of the non-profit sector and trickle down affects of a society that allows for a thriving civil society it is hypothesized that there is a positive relationship between NGO activity and health outcomes.

Variable Selection and Definitions

As discussed above, health outcomes are often analyzed under a variety of models. When analyzing health outcomes it is important to realize that determinants of health are complex. For instance, an increase in GDP per capita may result in longer healthy life expectancy at birth, which in turn may increase productivity and hence
further increases GDP. Likewise, low education levels may be associated with high levels of children under 5 yrs that are considered stunted thereby decreasing productivity in school.

The determinants of health outcomes have been evaluated under many models and categories. This model will follow the example of Bichaka (2005) and use the determinants of health in a health production function. The categories have been defined to attempt to capture the most relevant factors affecting health and to allow for the examination of the impacts of NGO activity. Figure 1 outlines the conceptual model for the production function.

![Figure 1- Conceptual Model]

**Political and Economic Variables**
- Democracy Index
- Level of Economic Development

**Health Services and Systems Variables**
- Health Expenditure per Capita
- Immunization Rate
- Number of Doctors

**Social and Physical Environment**
- Education
- Lifestyle
- Urbanization
- Access to Water/Sanitation

**Health Outcomes**
- Life Expectancy at birth
- HALE

**NGO Activity**
- # of NGO/INGOs per country
**Dependent Variables:**

The dependent variable is the indicator used to assess the health outcome of a country. For a thorough analysis, two health outcomes will be evaluated, specifically, Life Expectancy at Birth, and Healthy Life Expectancy (HALE).

- **Life Expectancy** - Life Expectancy at birth reflects the overall mortality of a population and summarizes mortality patterns across all age groups.\(^{xvii}\) Life expectancy is defined by the WHO as the average number of years a newborn child is expected to live if current mortality rates continue to prevail.\(^{xviii}\) This is a commonly used health outcome.

- **Healthy Life Expectancy (HALE)** - HALE is defined by the WHO as the average number of years a person can expect to live in “full health.”\(^{xxix}\) This measure takes into account measures of morbidity, which are not reflected in mortality measures. The WHO indicates that it is increasingly important to capture both fatal and non-fatal outcomes, as substantial resources are dedicated to reducing duration and severity of illness.\(^{xx}\)

**Independent Variables:**

- **NGO Activity** - Number of INGOs per country. The total number of local, domestic and international NGOs would be a valuable and ideal measure for NGO activity.
However, accurate and comparable data for these organizations is unavailable. NGO activity will therefore be measured by the number of International Non-Governmental Organizations (INGO) operating within a country. INGOs operate within and between countries to promote an increasing level of “universally recognized norms of development”. Since these organizations can impact many levels of society and because the activity levels are hard to define all INGOs are included, not just health related INGOs. The hypothesized result is that the greater the presence of INGOs within a country, the higher the level of health outcomes. Although, some level of ambiguity may exist, as these organizations may choose to operate within countries that have the greatest need.

- **Health Expenditure**- Health financing and the amount of money spent on health can obviously improve health systems dramatically. This will be measured as Health Expenditure as a percentage of GDP. While health expenditure per capita is an alternative measure health expenditure per capita may have multi-collinearity effects with income. It is therefore more appropriate to use ratio health expenditure to GDP. The total expenditure on health as a percentage of GDP is an indictor of how much money is being spent on health care in a given country. It can be hypothesized that there is a positive relationship between health expenditures and health outcomes, although countries with low GDP and high health costs may show the opposite effect.
- **Immunization Rate**- Immunization coverage is a good indicator of health system performance\textsuperscript{xxiv} and may affect health outcomes through the prevention of illness. This variable can be measured as percent of one year olds with immunized one dose of measles. The higher the rate of immunization the higher the expected health outcome should be.

- **Physician Density**- It is important to capture the availability, access and distribution of health services. The composition of health resources is also an indicator of the strength of the health system.\textsuperscript{xxv} This is measured as the number of physicians per 10,000 population.

- **Level of Democracy**- High Levels of Democracy are associated with positive health outcomes\textsuperscript{xxvi} and it is therefore useful to control for the level of democracy in a given country. This level of democracy of a country is defined by being free, partially free and not free as outlined by the Freedom Houses Annual Survey of Political Rights and Liberties.\textsuperscript{xxvii} Based on previous literature it is hypothesized that the higher the level of democracy, the higher the health outcomes.
**Level of Economic Development**

- GDP Per Capita: As incomes increase access to better health care and other goods that may influence health also increase and therefore GDP is a common measure of economic development. GDP per capita is expected to have a positive relationship with health outcomes. Likewise, as GDP decreases and poverty levels positive health outcomes are expected to decrease.

- Development Indicator: In order to evaluate the differences between developing and developed countries an indicator designating whether or not a country is considered developing is necessary. This variable is defined based on the World Banks classification of the income level of a country. Those countries that are considered low and low-middle income countries are designated developing and those above those brackets are considered developed.

**Education**

- Education affects many decisions and opportunities related to health, i.e. job possibilities, healthy habits, and efficient use of resources for medical care. It is hypothesized that the more educated a society is the better the health outcomes. Literacy rate is an appropriate and commonly used proxy for education. This is defined as the percent of the adult population that is literate.
- **Lifestyle**- There is an increasing body of literature supporting the fact that there are cultural and lifestyle choices that affect health outcomes that are outside the health system.\(^{xxx}\) While capturing these lifestyle choices is difficult, using per capita alcohol consumption among adults 15 and older can serve as a proxy and help capture some of these effects.\(^{xxxii}\)

- **Urbanization**- The transition from rural to urban living can have impacts on health. Urbanization can be associated with both access to care and negative environmental factors and it is therefore useful to include it in the model.\(^{xxxiii}\) While the direction may be unclear it is hypothesized that more urbanization increases health outcomes.\(^{xxxiv}\)

- **Access to Water and Improved Sanitation**- The WHO defines access to drinking water and improved sanitation, as a “fundamental need and a human right” that is important to health of all people. Both are associated with high health and economic benefits and are used as a monitor towards the Millennium Development Goals.\(^{xxxv}\) These two measures are highly correlated and are measures of largely the same infrastructure of a country. Therefore, the inclusion of only one is necessary in the model. This study defines the access to water as the percentage of the population with access to an improved driving water source in a given year. It
can be hypothesized that the higher the percentage of the population with improved access to water the higher the health outcome.

Table 2 summarized the variables selected and demonstrates the hypothesized relationship between the variables of interest and the dependent variables.

<table>
<thead>
<tr>
<th>Table 2: Expected Relationship between Independent and Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>NGO Activity</td>
</tr>
<tr>
<td>Number of NGO/INGO per country</td>
</tr>
</tbody>
</table>

**Health Services and Systems Variables**

| Variable | Relationship  |
| Health Expenditure per Capita | Positive  |
| Immunization Rate | Positive  |
| Number of Hospital Beds | Positive  |

**Political and Economic Variables**

| Variable | Relationship  |
| Level of Democracy | Positive  |
| GDP per capita | Positive  |

**Social and Physical Environment**

| Variable | Relationship  |
| Literacy Rate | Positive  |
| Lifestyle- per capita alcohol consumption | Negative  |
| Urbanization | Uncertain  |
| Access to Water | Positive  |
| Access to Improved Sanitation | Positive  |
| HIV/AIDS Problem | Negative  |

**Research Design and Model**

An Ordinal Least Squared (OLS) regression analysis will be used to determine the effects of NGO activity and the other independent variable on health outcomes. In addition to using the standard measure of GDP as a measure of economic development, using a development indicator allows us to examine if there is an affect of being a
developing country on health outcomes. Using an additional measure of economic development can also help to provide further evidence of hypothesis by insuring the stability and applicability of the parameter estimates and results.

Of particular interest to this study is the possibility that the effect of NGOs may vary depending on a country’s stage of development. In order to identify if there was a significant effect of NGOs, given a country is developing, an interaction term can be added to the model. Adding an interaction term between the number of NGOs and the development indicator added no explanatory power to the model and, was highly insignificant. Therefore, the original model was preferred.

Another way to analyze the difference between developed and developing countries is to examine if the effects of the entire model differ by each group. In other words, examine if differences exist between developed and developing countries for the entire regression function. In order to determine whether the regression functions on health outcomes vary by “developing,” a fully interacted model can be run to test the null hypothesis that the process for determining health outcomes are different for the two categories. In order to evaluate this the development dummy was used as the level of economic development (as opposed to using GDP per capita). This process involves interacting all the variables in the model with the development indicator and testing the significance of the parameter estimates of those interaction variables.

If the null is rejected it would not be reasonable to analyze the effects of the variables based on the complete sample and would suggest separate regressions would
be needed. Running this fully interacted model, mirrors the results of running a Chow Test with pooled and unpooled samples. The F-test yields p-value of 0.4355 leading to a failure to reject the null hypothesis. It can therefore be assumed that the original model is the appropriate model to test the effect of NGOs and the other independent variables on health outcomes. While this does not allow us to say anything specifically about the differences between developed and developing countries specifically, it does allow us to evaluate parameter estimates for the whole sample. Figure 2 outlines the equations for the regressions for each dependent variable using both measures of economic development.

**Figure 2: Model Specifications**

<table>
<thead>
<tr>
<th>Equations:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model I:</strong></td>
</tr>
<tr>
<td>Model IA: HALE = $\beta_0 + \beta_1(\text{Measles}) + \beta_2(\text{Alcohol}) + \beta_3(\text{Literacy}) + \beta_4(\text{Percent Access to Water}) + \beta_5(\text{Health Expenditure}) + \beta_6(\text{Number Doctors}) + \beta_7(\text{developing}) + \beta_8(\text{Partially Free}) + \beta_9(\text{Not Free}) + \beta_{10}(\text{Percent Urban}) + \beta_{11}(\text{NGO Activity}) + \mu$</td>
</tr>
<tr>
<td>Model IB: Life Expectancy = $\beta_0 + \beta_1(\text{Measles}) + \beta_2(\text{Alcohol}) + \beta_3(\text{Literacy}) + \beta_4(\text{Percent Access to Water}) + \beta_5(\text{Health Expenditure}) + \beta_6(\text{Number Doctors}) + \beta_7(\text{developing}) + \beta_8(\text{Partially Free}) + \beta_9(\text{Not Free}) + \beta_{10}(\text{Percent Urban}) + \beta_{11}(\text{NGO Activity}) + \mu$</td>
</tr>
<tr>
<td><strong>Model II:</strong></td>
</tr>
<tr>
<td>Model IA: HALE = $\beta_0 + \beta_1(\text{Measles}) + \beta_2(\text{Alcohol}) + \beta_3(\text{Literacy}) + \beta_4(\text{Percent Access to Water}) + \beta_5(\text{Health Expenditure}) + \beta_6(\text{Number Doctors}) + \beta_7(\ln \text{GDP per capita}) + \beta_8(\text{Partially Free}) + \beta_9(\text{Not Free}) + \beta_{10}(\text{Percent Urban}) + \beta_{11}(\text{NGO Activity}) + \mu$</td>
</tr>
<tr>
<td>Model IB: Life Expectancy = $\beta_0 + \beta_1(\text{Measles}) + \beta_2(\text{Alcohol}) + \beta_3(\text{Literacy}) + \beta_4(\text{Percent Access to Water}) + \beta_5(\text{Health Expenditure}) + \beta_6(\text{Number Doctors}) + \beta_7(\ln \text{GDP per capita}) + \beta_8(\text{Partially Free}) + \beta_9(\text{Not Free}) + \beta_{10}(\text{Percent Urban}) + \beta_{11}(\text{NGO Activity}) + \mu$</td>
</tr>
</tbody>
</table>
Dataset Formulation

As stated above, available and comprehensive data is one of the biggest challenges that plagues quantitative studies of health, development and NGO studies. Data was collected for each of the selected variables for 192 countries with an emphasis on minimizing missing observations. The majority of the data were obtained from The World Health Organization, with supplemental information coming from the World Bank, the United Nations Human Development Report and the Annual Survey of Political Rights and Civil Liberties. The key variable of interest, the number of NGOs per country, was acquired from the Yearbook of International Organizations.

Data were compiled from these sources in order to minimize the limitations that come from missing and incomplete data. In order to use the most recent data available, while obtaining the most complete data possible, 2002 was selected as the time period of the study. However, data for all variables were not available for this specified year, and where necessary previous and later years were used as proxies for the year of analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Year Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy</td>
<td>2003</td>
</tr>
<tr>
<td>Population in Urban areas</td>
<td>2005</td>
</tr>
<tr>
<td>Literacy</td>
<td>2005</td>
</tr>
<tr>
<td>Mid Year Population</td>
<td>2005</td>
</tr>
<tr>
<td>GDP</td>
<td>2003</td>
</tr>
<tr>
<td>Number of doctors per 10,000 population</td>
<td>Various years 1995-2004*</td>
</tr>
</tbody>
</table>

*Note: the majority of data comes from 2000-200
This was only done in circumstances where it seems reasonable that the values for such a variable would not change much over the time period elapsed. For instance, the percent of a population that is literate was obtained from 2005, however, it seems reasonable to assume that the literacy rate of a country would not vary much over a two or three-year period. Figure 3 lists variables where using other years as proxies for 2002 was necessary.

The WHO provides one of the most useful and comprehensive data available for the variables of interest in this study. Unless noted below data was obtained from the World Health Statistics Online Database xxxvi made available by the WHO. The World Bank’s World Development Indicators database xxxvii was utilized to obtain the GDP variable. The number of Non-Governmental Organizations in a country was obtained from the annual publication The Yearbook of International Organizations. The measure of the level of democracy was obtained from the Annual Survey of Political Rights and Civil Liberties, published annually by the Freedom House. While the data sets were selected to minimize missing variables, in order to avoid observations dropping out of the model due to missing observations it was useful for some variables to be supplemented from similar data sets that included the information lacked by the WHO data set.

The percent of a country’s population that is literate was a variable that had a number of missing observations. To remedy this problem, missing observations were supplemented by the 2003 estimates of United Nations Human Development Report
Human Development Index. Correlations between the two data sets were very high and it is therefore reasonable to assume that the data is a suitable proxy for the 2002 WHO data.

The percent of the population with total access to water was another variable that had a number of missing observations. This variable has also been found to be highly relevant to health outcomes and it is therefore important to ensure it remains in the model.

Figure 4: Countries with water access assumed to be 100%

<table>
<thead>
<tr>
<th>Belgium</th>
<th>France</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>Italy</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Singapore</td>
</tr>
<tr>
<td>Spain</td>
<td>UK</td>
</tr>
</tbody>
</table>

To avoid a country dropping out of the regression due to the lack of this important variable three steps were taken. First, if the data was missing from the WHO data for the year of analysis it was supplemented with the World Banks estimate for that same year. The correlation between the two data sets was almost perfect. Additionally, some of the missing observations can be attributed to the assumption that access is nearly 100% in those countries. Figure 4 lists the countries where access was assumed to be nearly complete.

Lastly, there were thirteen countries for which the percentage access to water was imputed based on the United Nations classification of a country as a high, medium or low human development country. Then the average access to water for a high
medium, or low human development country was used to approximate the level of access to water in that country. Figure 5 lists countries for which this imputation process was completed.

<table>
<thead>
<tr>
<th>Country</th>
<th>Country</th>
<th>Country</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Estonia</td>
<td>Lithuania</td>
<td>Slovenia</td>
</tr>
<tr>
<td>Bahrain</td>
<td>Fiji</td>
<td>Poland</td>
<td></td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>Kuwait</td>
<td>Portugal</td>
<td></td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Latvia</td>
<td>Saudi Arabia</td>
<td></td>
</tr>
</tbody>
</table>

The last step that was taken to complete the data set formulation was the creation of variables from existing variables. Specifically, two variables were created: natural log of GDP per capital and the total population with access to an improved source of water. GDP per capita was derived from dividing the GDP of the country by the mid-year population of that country. Since access to water variable was measured separately for urban and rural areas for each country, a new indicator of access to water was created by taking the weighted average of these two variables based on the proportion of urban and rural populations of each country.
Descriptive Statistics

While it may not initially seem productive to analyze the descriptive statistics of the entire set of countries in the world some interesting and important information can be drawn from the means and frequencies of the sample. Table 3 provides the summary statistics for the whole sample, as well as the statistics broken down by whether the country is developing or not. This is particularly helpful when looking at frames of reference i.e. would a ten doctors increase per country a large increase or not. It is also useful to examine whether the numbers seems to change or differ between developed and developing countries.

Data from these descriptive statistics describes largely what is expected, particularly when looking at developing and developed countries. For instance, both HALE and Life Expectancy are greater in developed countries. GDP per capita, immunization and literacy rates are also higher in developed countries. Alcohol consumption is higher in developed countries, likely due to the availability of disposable income. It is interesting to note that the level of democracy tends to be higher for developed countries. The number of developing countries classified as partially free or not free are much greater than the number of developed countries classified in the same way. Also, developed countries have more than twice as many countries classified as free than developing countries. There is also a large difference in the percentage of the population that lives in urban areas. In developed countries it is about 73% versus 43% in developing countries.
One last important figure to note is the average number of NGOs. Countries around the world on average have about 1,500 NGOs operating in their country. This number increases for developed countries to over 2,500 and decreases to fewer than 1,000 for developing countries.

<table>
<thead>
<tr>
<th>Table 3: Summary Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Countries</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Life Expectancy</td>
</tr>
<tr>
<td>HALE</td>
</tr>
<tr>
<td>Measles</td>
</tr>
<tr>
<td>Alcohol</td>
</tr>
<tr>
<td>Literacy</td>
</tr>
<tr>
<td>Percent Access to Water</td>
</tr>
<tr>
<td>GDP per cap</td>
</tr>
<tr>
<td>Health Expenditure as a percentage of GDP</td>
</tr>
<tr>
<td>Number doctors per 10,000 population</td>
</tr>
<tr>
<td>Countries Free</td>
</tr>
<tr>
<td>Countries Partially Free</td>
</tr>
<tr>
<td>Countries Not Free</td>
</tr>
<tr>
<td>% Living in urban area</td>
</tr>
<tr>
<td>Number of NGOs</td>
</tr>
</tbody>
</table>
RESULTS

Ordinary Least Squares analysis was used to determine the impact of NGOs on health outcomes. Four multi-variate regressions were run examining two separate dependent variables. For each dependent variable, two separate regressions were run exchanging a development indicator for GDP per capita as the measure using of economic development. Model I uses an development indicator as the level of economic development. Model IA uses HALE as the dependent variable and IB uses Life Expectancy as the dependent variable. Model II uses GDP per capita as the level of economic development with Model IIA using HALE and Model IIB using Life Expectancy as the dependent variables respectively. Table 5 presents the results of the analysis using GDP as the measure of economic development. The results given in Table 4, demonstrate the results when GDP is replaced by the development indicator variable.

Cross-national, quantitative studies are vulnerable to the problem of multi-collinearity. In particular, many indicators of health such as literacy and access to water are both likely to be correlated with GDP. To test if multi-collinearity is a concern in this study utilizes the technique of regressing all independent variables against each other. This is done to ensure the $R^2$ values are not larger than the $R^2$ values obtained in the regressions including the dependent variable (Lewis-Beck 1980, Kennedy 2001, Shandra 2004). Lewis-Beck also suggests that as long as the $R^2$ value is not close to 1, multi-collinearity will not affect the stability of the estimates. Regressing the
independent variables on each other produced $R^2$ values mostly in the 0.3-0.5 range with no values much higher than 0.6. Since these are both smaller than the original estimates and not close to 1, we can assume the stability of the estimates in the model is not affected by multi-collinearity.

Both Models I and II indicate a positive and statistically significant effect of NGOs on health outcomes. While there is some variation in the coefficients of the control variables they largely remain the same across both models. The magnitude of the impacts varies somewhat, and this variation is to be expected considering GDP is likely to capture smaller and more incremental impacts on health outcomes. Both Models I and II, demonstrate high explanatory power with $R^2$ values ranging from 0.68-0.76. When GDP is used as the level of economic development the $R^2$ value is slightly higher, confirming that using GDP is able to capture more of the variation in health outcomes than the model using the development dummy.

**MODEL I: Development Dummy as the Level of Economic Development**

Table 4 shows the estimations if a development dummy is used as the level of economic development. The relatively high $R^2$ values of both models IA and IB indicate that the independent variables explain a large percentage of the variation in the dependent variables. Model IA, predicting marginal impacts on Healthy Life Expectancy explains about 74.5% of the variation in HALE while the $R^2$ value of Model IB, predicting Life Expectancy, demonstrates the model explains about 68.57%
of the variation in Life Expectancy. Both models yield largely similar results and statistical significance of the variables does not change much from A to B.

Model IA indicates with all other values equal to zero HALE is expected to be 27.85 years. The intercept varies from the Life Expectancy model, which predicts about 34 years with all other variables equal to zero.

<table>
<thead>
<tr>
<th>Table 4: Regression Results-Development Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Intercept</td>
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<tr>
<td></td>
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<tr>
<td>Measles</td>
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<td></td>
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<tr>
<td>Alcohol</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Literacy</td>
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<tr>
<td></td>
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<tr>
<td>Percent Access to Water</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Developing Country</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Health Expenditure as a percentage of GDP</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Number doctors per 10,000 population</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Partially Free</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Not Free</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Number of NGOs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Percent Population in living in an Urban Area</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
</tr>
</tbody>
</table>

*** Significant at the $\alpha=0.01$ level
**  Significant at the $\alpha=0.05$ level
* Significant at the $\alpha=0.10$ level

The estimations in these models demonstrate a positive and significant affect on the number of NGOs per country. Using Model I an increase of 100 NGOs per country is expected to have an increase of .12 years and .1 years on HALE and Life Expectancy
respectively. This corresponds to about a 48 day increase in HALE and a 36.5-day increase in Life Expectancy. We can therefore reject the null hypothesis that the number of NGOs in a country has no affect on health outcomes.

**MODEL II: GDP per capita as the measure of Economic Development**

Table 5 provides the parameter estimates for Model II. Both Models IIA and IIB demonstrate relatively high R² values and indicate that the independent variables explain a large percentage of the variation in the dependent variables. Model IIA, predicting marginal impacts on Healthy Life Expectancy explains about 76% of the variation in HALE while the R² value of the model predicting Life Expectancy demonstrates the model explains about 70% of the variation in Life Expectancy. Both models yield largely similar results and statistical significance of the variables does not change much from model to model.

Model IIA indicates with all other values equal to zero HALE is expected to be 11.74 years. The intercept varies from the Life Expectancy model, which predicts about 17 years with all other variables equal to zero.

Again, in both Models A and B the importance of the number of NGOs per country on health outcomes is demonstrated by the positive and significant coefficients on the NGO. We can therefore reject the null hypothesis that the level of NGO activity has no effect on health outcomes. Using these estimates, an increase of 100 NGOs in a country is associated with a .08-year increase in HALE, which corresponds to an
increase of about 29 days. The impact on Life Expectancy in general is positive and significant, although somewhat smaller in magnitude. With an increase of 100 NGOs in a country Life Expectancy is expected to rise by .02 years, the equivalent of about 8 days.

Table 5: Regression Results- GDP per capita

<table>
<thead>
<tr>
<th>Variable</th>
<th>HALE (eq IIA)</th>
<th>Life Expectancy (eq IIB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>11.74019**</td>
<td>16.95025***</td>
</tr>
<tr>
<td></td>
<td>(5.03746)</td>
<td>(6.05851)</td>
</tr>
<tr>
<td>Measles</td>
<td>0.04478</td>
<td>0.05782</td>
</tr>
<tr>
<td></td>
<td>(.03982)</td>
<td>(0.04789)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>-0.44710***</td>
<td>-0.56860***</td>
</tr>
<tr>
<td></td>
<td>(.139)</td>
<td>(.16717)</td>
</tr>
<tr>
<td>Literacy</td>
<td>0.11881***</td>
<td>0.109***</td>
</tr>
<tr>
<td></td>
<td>(.03444)</td>
<td>(.04142)</td>
</tr>
<tr>
<td>Percent Access to Water</td>
<td>0.14367***</td>
<td>0.17276**</td>
</tr>
<tr>
<td></td>
<td>(.04023)</td>
<td>(.04838)</td>
</tr>
<tr>
<td>Ln GDP per cap</td>
<td>1.33067***</td>
<td>1.38322***</td>
</tr>
<tr>
<td></td>
<td>(.39231)</td>
<td>(.47183)</td>
</tr>
<tr>
<td>Health Expenditure as a percentage of GDP</td>
<td>-0.017289</td>
<td>-0.26164</td>
</tr>
<tr>
<td></td>
<td>(.23679)</td>
<td>(0.28478)</td>
</tr>
<tr>
<td>Number doctors per 10,000 population</td>
<td>0.17789***</td>
<td>0.17636***</td>
</tr>
<tr>
<td></td>
<td>(.05018)</td>
<td>(.06035)</td>
</tr>
<tr>
<td>Partially Free</td>
<td>-2.7798***</td>
<td>-2.59987*</td>
</tr>
<tr>
<td></td>
<td>(1.19572)</td>
<td>(1.43808)</td>
</tr>
<tr>
<td>Not Free</td>
<td>-2.86558**</td>
<td>-3.3222**</td>
</tr>
<tr>
<td></td>
<td>(1.33631)</td>
<td>(1.60717)</td>
</tr>
<tr>
<td>Number of NGOs</td>
<td>0.00087621**</td>
<td>.000213065*</td>
</tr>
<tr>
<td></td>
<td>(0.00038847)</td>
<td>(0.00046721)</td>
</tr>
<tr>
<td>Percent Population in living in an Urban Area</td>
<td>0.03632</td>
<td>0.04924</td>
</tr>
<tr>
<td></td>
<td>(.02895)</td>
<td>(0.03481)</td>
</tr>
<tr>
<td>R²</td>
<td>.7603</td>
<td>.7008</td>
</tr>
</tbody>
</table>

*** Significant at the α=0.01 level
** Significant at the α=0.05 level
*Significant at the α=0.10 level

Control Variables

It is also important to note the performance of the control variables to see how the impact on HALE and Life expectancy may vary. Whether GDP or the
development dummy was used there performance of the control variables remained largely the same and the parameter estimates were quite similar. The following results demonstrate the impact of Model II, as it is a stronger model, and unless stated the results were more or less the same in the model using the development dummy.

All things being equal, as the per capita consumption of pure alcohol in a population increases by one liter HALE is expected to fall by 0.45 years. As the literacy rate of a population increases by one percentage point HALE is expected to increase by 0.12 years. As the percentage of the population with access to improved water sources increases by one percentage point HALE is expected to increase by 0.14 years. As the number of doctors per 10,000 increases by 1, HALE is expected to increase by 0.177 years. A more meaningful interpretation would be an increase of 10 doctors per 10,000 is associated with a 1.77-year increase in HALE.

In terms of economic development, 0.013 years is the expected increase when GDP per capita is increased by 1 dollar. Therefore a $10 increase in GDP per capita is associated with a 1.3-year increase in HALE. If a development dummy is used in place of GDP, a country that is considered developing is expected to have a HALE of 3.5 years less than that of a developed country.

It is also interesting to note the major differences between the models using GDP and a development indicator. In Model I, using the development indicator, the intercepts and parameter estimates for percent of the population immunized are higher. Immunization rate is statistically significant in the model using the dummy and not in
the other. Additionally, in Model II, using GDP, the level of democracy has a statistically important impact and is associated with improved health outcomes. For example, countries categorized as “partially free” are expected to have a HALE of 2.78 fewer years than those categorized as free. Those countries categorized as “not free” are expected to have a HALE of about 2.87 fewer years than countries categorized as “free.” This impact was not captured in the model using the development dummy.
DISCUSSION AND POLICY IMPLICATIONS

This study finds that NGOs can have positive, measurable impacts on health outcomes, which would seem to imply that policies NGO activity would elicit health benefits. This study supports the established link between increasing health status and development. Additionally, the growing body of normative analyses suggests that NGOs can have an important role in both health promotion and other development activities. In light of this existing work, the correlation between NGOs and activity would seem to suggest increased promotion of NGO involvement in both health, and development overall. However, the proscriptive policy implications of the results are contingent upon the strength and magnitude of the estimates, as well as the practicality of the suggested level of increased NGO activity.

First, while positively correlated, the overall impact of NGO activity appears to be relatively modest and is best understood comparatively. While an increase of 8 days for Life Expectancy and 29 days for HALE seems relatively small, they still represent measurable and important increases. When compared to the impacts of other inputs which have consistently been shown to have positive affects on health such as literacy rate, and physician density, the relative impact of NGO activity becomes clear. For example, increasing literacy by one percentage point is associated with an increase of about 40 days in HALE, which is comparable in scale to NGO activity. The comparative increase is especially impressive given the significant challenge posed by increasing literacy by even one percentage point. Similarly, NGO activity compares
favorably with the 65 day HALE increase associated with increasing physician density by 10 doctors per 10,000 population, a measure of health resources with a fairly direct impact on health. A true policy prescription in this respect, would require a cost-benefit analysis of these various inputs. While that is beyond the scope of this study, the correlation certainly warrants more exploration.

Secondly, in order to evaluate the policy validity of the proposal, it is important to consider whether an increase of 100 NGOs is a feasible or realistic increase for developing countries. An increase of 100 NGOs would constitute a 6.4% increase in activity for the mean 1,571 NGOs per country in the study. In developing countries, there are even fewer NGOs, around 951 on average, thus the requisite increase would call for a 10% boost. Considering the wide spread normative promotion of utilizing NGOs as service providers, policy advocates and the overall benefits associated with an active civil society a 10% increase seems like a feasible policy goal. The data also give an indication about the type of outcomes that can be affected by policies promoting growth of the non-profit sector. For instance, the model predicting Healthy Life Expectancy explained more of the variation in Healthy Life Expectancy than the corresponding data for Life Expectancy. The fact that at the intercept on Life Expectancy is larger may indicate that there is may be some unobserved determinant (i.e. genetics) to life expectancy that is affected less by development encouraging programs. The parameter estimates for HALE were often greater than in the model predicting Life Expectancy indicating that the variables (including number of NGOs)
have a greater impact on HALE. This in addition to intercept differences may tell us something about the differences between how polices can affect different health outcomes. For instance, policies targeting inputs such literacy and number of NGOs can have greater influences on HALE, while still improving Life Expectancy, to a smaller degree. This implies that policies should be constructed to affect the correct and intended outcomes. The fact that such policies affect Life Expectancy to a lesser degree is not necessarily discouraging. For example, increases in HALE seem promising for achieving improvements in development activities that aim to increase productivity and decrease morbidity.

This study also highlights the need for policies that encourage data collection and reporting within the NGO sector. It is important to recognize that NGOs are often considered “effective” because of their small size, flexible management structures and ability to adapt to various local conditions. Yet it is these strengths that also correspond with infrastructure limitations. While governments and policy makers should be wary of placing demands on NGOs beyond that of their capacity, minimal and standard reporting procedures could greatly improve the ability of researchers to assess trends within the non-profit sector. In light of the increases in the utilization of the non-profit model, being able to identify operational NGOs and measure their impacts should be embedded in policies advocating their use. These policies need to be conscious of the capacity limitations and balance data needs and the mission of the NGO, as to not distract from its core functions.
CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study supports the idea that NGOs have a significant and important role in the development and in particular on health outcomes at the national level. NGOs are found to have positive effects on both Life Expectancy and Healthy Life Expectancy. Considering trends in development, aid, and public health practices policies should be drafted considering the qualitative comparative advantages of NGOs in special fields of activity, as well as the quantitative impacts that NGOs can have.

One of the biggest challenges to these studies is the lack of availability of complete and comparable data across countries. The particular limitation of this study was the inability to differentiate between the effects of NGOs on developing and developed countries within the sample. While model is good predictor of whole sample, statistical inferences could not be made between differences that may exist between the two groups. A study that is able to identify specific differences between developed and developing countries may also allow for the identification of policy implications specifically towards developing countries. One possible way to accomplish this would be to use panel data. Additionally, this method would allow for the controlling of “country specific” effects that this model was unable to identify. An analysis using time series data could provide more comprehensive analysis and may enable a more substantial quantitative analysis on both the factors that influence health and the importance of NGO activity.
An additional suggested area of research would be to identify comparable areas where measuring the effect of NGOs may be possible, perhaps estimating test scores and education. Lastly, accurately measuring the strength and presence of NGO activity is perhaps the most problematic concept plaguing studies of the NGO sector. If reliable and comparable data were available on national and local non-profits further analysis could be done on the true impacts of NGOs.
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