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Applied Research on Decentralization of Health Systems in Latin America:

Colombia Case Study

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ACRONYM LIST

ARS	Adminstradoras del Régimen Subsidiados (Administration of the Subsidized Regime)
DNP	National Planning Department
EPS	Entidades Promotoras de Salud (autonomous insurance and managed care organizations)
ESE	Empresas Sociales del Estado (Competitive semi-public insurance organization)
ESS	Empresas Solidarias de Salud (Competitive private insurance organization)
FIS	Fondo de Cofinanciación de Inversión Social (Social Investment Fund)
FNR	National Royalty Fund
FOSYGA	Fondo de Seguridad y Garantía (National Health Insurance System Funding)
INBI	Index of Unmet Basic Needs
ISP	Affiliated Service Provider Institution
ISS	Instituto de Seguridad Social (Social Security Institute)
MOH	Ministry of Health
PAB	Plan de Atención Básica (Basic Service Plan)
POS	Plan Obligatorio de Salud (Mandatory Health Plan)
POSS	Plan Obligatoria de Salud—Subsidiado (Manditory Health Plan for Subsidized)
PPE	Promotion and Prevention Expenditure
SISBEN	Beneficiary Identification System
SNC	Sistema Nacional de Cofinanciación (National Co-financing System)
SSS	Direcciones Locales de Salud (formerly called Servicios Seccionales de Salud)
TGE	Total general expenditure
THE	Total health expenditure
TOGE	Total own-source general expenditure
TOHE	Total own-source health expenditure
UPC	Unidad de Pago por Capitación (Risk-Adjusted Capitation Rate)

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BACKGROUND AND THEORETICAL REVIEW

In the last two decades, health sector decentralization policies have been implemented on a broad scale throughout the developing world. Decentralization, often in combination with health finance reform, has been touted as a key means of improving health sector performance and promoting social and economic development (World Bank 1993). The preliminary data from the field, however, indicate that results have been mixed, at best. In some cases, these limitations have resulted in a backlash against the reforms and an initiative for recentralization. We believe that this rejection is often premature or misplaced, and that the issue at hand is how to better adapt decentralization policies to achieve national health policy objectives. In this context, it becomes increasingly important adequately to understand the dynamics of health sector reform processes in diverse contexts, to draw both general and case-specific lessons, and to formulate effective strategies for future research and policy making.

The term "decentralization" has been used to connote a variety of reforms characterized by the transfer of fiscal, administrative, and/or political authority for planning, management, or service delivery from the central Ministry of Health (MOH) to alternate institutions. These recipient institutions may be regional or local offices of the same ministry, provincial or municipal governments, autonomous public service agencies, or private sector organizations. Decentralization has been predicted to improve health sector performance in a number of ways, including the following: (1) improved allocative efficiency through permitting the mix of services and expenditures to be shaped by local user preferences; (2) improved production efficiency through greater cost consciousness at the local level; (3) service delivery innovation through experimentation and adaptation to local conditions; (4) improved quality, transparency, accountability, and legitimacy owing to user oversight and participation in decision-making; and (5) greater equity through distribution of resources toward traditionally marginal regions and groups. At the same time, fears have been raised about potential macroeconomic destabilization and the aggravation of interregional disparities in wealth and institutional capacity as a result of decentralization (Prudhomme 1995).

The recent proliferation of decentralization policies is part of a broader process of political, economic, and technical reform (World Bank 1998). These include "democratization" and, perhaps more importantly, the neo-liberal "modernization" of the state. The latter movement promotes institutional and territorial decentralization as a means to introduce competition and cost-consciousness into the public sector, and develops a new role for the state in "enabling" and "steering" rather than replacing private sector activities. The promotion of cost-effective investment in primary care and outreach services, beginning with the Alma Ata Conference on Primary Health Care in 1978 and reinforced in the World Bank's 1993 World Development Report, have provided a further technical impetus for health sector decentralization.

The range of policies grouped under the rubric of "decentralization" is quite diverse with respect to objectives, mechanisms, and effects. In this report, we will make use of widely accepted terminology developed by Rondinelli (1981), who identifies three principal categories of decentralization: deconcentration, delegation, and devolution. *Deconcentration* is generally the most common and limited form of decentralization, and involves the transfer of functions and/or resources to the regional or local field offices of the central government agency in question. Within a deconcentrated system, authority remains within the same institution (e.g. the Ministry of Health) but is "spread out" to the territorially decentralized instances of this

institution. *Delegation* implies the transfer of authority, functions, and/or resources to an autonomous private, semi-public, or public institution. This institution assumes responsibility for a range of activities or programs defined by the central government, often through the mechanism of contracting. *Devolution* is the cession of sectoral functions and resources to autonomous local governments, which in some measure take responsibility for service delivery, administration, and finance.

METHODOLOGY & THE DECISION-SPACE APPROACH

Our analytical framework for the evaluation of these cases is based on a principal-agent approach. In this perspective, the central government, generally in the figure of the Ministry of Health, is viewed as setting the goals and parameters for health policy and programs. Through the various modes of "decentralization" described above, the central government delegates authority and resources to local agents—municipal and regional governments, deconcentrated field offices, or autonomous institutions—for the implementation of its objectives.

This approach acknowledges that the central and local governments have at least partially differing objectives. Agents often have distinct preferences with respect to the mix of activities and expenditures to be undertaken, and respond to a differing set of stakeholders and constituents than national-level principals. Local institutions, therefore, may have incentives to evade the mandates established by the central government. Moreover, because agents have better information about their own activities than does the principal, they have some margin within which to "shirk" centrally defined responsibilities and pursue their own agendas. The cost to the principal of overcoming this information asymmetry is often prohibitively high. Within this context, the central government seeks to achieve its objectives through the establishment of incentives and sanctions that effectively guide agent behavior without imposing unacceptable losses in efficiency and innovation. Diverse mechanisms are employed to this end, including monitoring, reporting, inspections, performance reviews, contracts, grants, etc.

The process of decentralization may be seen as one of selectively broadening the "decision space" or range of choice of local agents, within the various spheres of policy, management, finance, and governance (Bossert 1998). The central principal voluntarily transfers formal authority to the agent in question in order to promote its health policy objectives. The degree and nature of this transfer differs by case, and shapes the function of the principal-agent relationship and the decentralized system as a whole. This report does not seek to quantify formal decision space, but rather to offer a preliminary characterization of its range—narrow, moderate, broad—within an array of health system functions. The nature and extent of decision space is presented through "maps," similar to Figure 1 presented below, which are complemented by an analysis of the history and context of decentralization reforms.

Figure 1. Standard Decision-Space Map

Function	Range of Choice		
	Narrow	Moderate	Wide
Finance			
Sources of revenue	⇒	⇒	⇒
Allocation of expenditures	⇒	⇒	⇒
Income from fees & contracts	⇒	⇒	⇒
Service Organization			
Hospital autonomy	⇒	⇒	⇒
Insurance plans	⇒	⇒	⇒
Payment mechanisms	⇒	⇒	⇒
Contracts with private providers	⇒	⇒	⇒
Required programs/norms	⇒	⇒	⇒
Human resources			
Salaries	⇒	⇒	⇒
Contracts	⇒	⇒	⇒
Civil service	⇒	⇒	⇒
Access rules			
Targeting	⇒	⇒	⇒
Governance rules			
Local government			
Facility boards	⇒	⇒	⇒
Health offices	⇒	⇒	⇒
Community participation	⇒	⇒	⇒

There are other channels of control that the central government has to shape or override local decisions. The central government may offer incentives to local decision-makers to encourage them to make choices in favor of national priorities. These incentives can be in the form of matching grants in which the national government will provide funding for a priority activity if the local government will provide counter-part funding and implement the activity. Incentives can also come in the form of guidelines – for instance, model fee schedules – and other forms of technical assistance to upgrade local capacity and to influence local decisions. They may also come in the form of specific training and skill development in the areas that would strengthen central priorities. There may also be mechanisms for special recognition of achievements in priority areas – such as competitions for highest immunization rates among municipalities. Finally, the central government can simply provide services that are centrally directed – such as continuing to provide malaria control programs and vaccination campaigns run and funded by the central government.

A central question however, is how do the different choices allowed at the peripheral level affect the performance of the system? We often expect health sector reforms to produce improvements in equity, efficiency, quality and financial soundness of the health system (Bossert, 1998). For us then it will be important to assess how decentralization as implemented in Colombia, has affected system performance along these dimensions.

This preliminary report presents the case of health sector decentralization in Colombia, one of the few LAC countries in recent years to adopt and implement a significant decentralization of a highly centralized national public sector health system. We seek to evaluate several closely related dimensions of decentralization policies. First, we review the background to the decentralization process – the characteristics of the system prior to decentralization. Second, we assess the process by which decentralization was adopted and implemented. Third, we look at the ways in which the reforms affect local health sector decision-makers and the range of choice available to them, using our analytical framework and "decision space" analysis. Finally, we analyze the effect of decentralization on performance of the health system in providing equity, efficiency, quality, and financial soundness.

OVERVIEW OF THE HEALTH SYSTEM IN COLOMBIA, 1970-1998

Colombia is a lower middle-income Andean country of 38 million inhabitants, over 70% of whom live in urban areas. As of mid-1995, the country was divided into 32 departments, 1050 municipalities and three special districts Bogotá, Cartagena, and Santa Marta (Harvard Review 1996). As of 1996, the total number of municipalities rose to 1073 (Yepes 1998). Upwards of 70% of these municipalities had less than 20,000 inhabitants and were predominantly rural, but the five or six largest urban municipalities contained over 50% of Colombia's population (Fizbein 1997).

Per capita GNP is approximately US$1,800, and both the literacy rate (93%) and basic service coverage (82% for water and 69% for sanitation) are fairly high by regional standards (PAHO 1998). The infant mortality rate is 25 per 1,000 live births, and average life expectancy is over 70 years. Wide variation in these indicators is noted, particularly between the better-off urban areas in the Andean region and the poorer, mostly Afro-Colombian communities of the Pacific coast region. In general, the relative impact of chronic—particularly cardiovascular—diseases in Colombia's mortality profile indicates that the country is well along in the epidemiological and demographic transition. However, the unusual prevalence of violence, which is responsible for nearly a third of all deaths among males, is noteworthy (PAHO 1998).

Colombia has a long and distinguished history of public sector health investment, beginning with the establishment of the Ministerio de Higiene in 1913, which became the Ministerio de Salud Pública in 1953. In 1975, the Sistema Nacional de Salud (SNS) was established through the semi-nationalization of departmental, municipal, and non-governmental hospitals and the development of a deconcentrated management and health service delivery network. This network was based on the departmental level instances of the Ministry of Health, funded through the Fondo Seccional de Salud established under the 1965 Constitution. The following period brought a significant expansion of Colombia's health facility network, with over 90% of human and financial resources concentrated on curative care and over 50% of this in secondary and tertiary hospitals (Jaramillo 1997).

During the 1980s, Colombia's health system went through a significant transformation, based both on the primary care orientation established at the 1978 Alma Ata Conference on Primary Health Care and the Pan American Health Organization's Local Health Systems (SILOS) initiative. Colombian health policy moved toward a Municipal Health System (SMS) based on intersectoral management of environmental and health risk factors.

Currently, since the reform, the public health sector is organized on three levels:

- Central:
    - Ministry of Health (MOH) with 5 directorates: Health Reform, Decentralization, General Health Services, Promotion and Prevention, and Financial Management
    - Associated semi-autonomous institutes (Colombian Institute of Family Welfare, National Institute of Health, and the National Cancer Institute)
- Departments:
    - Direcciones Locales de Salud (formerly called Servicios Seccionales de Salud (SSS), the initially deconcentrated offices of the MOH that later devolved to Departmental Offices)
- Municipal:
        - Health administrations under mayors (Fondos Locales de Salud)
        - Autonomous hospital administrations

Public sector service delivery is accomplished through a network of 4,000 health posts, 500 Level I (lowest complexity) hospitals, 124 Level II (secondary, intermediate complexity) hospitals, and 27 Level III (tertiary and quaternary) hospitals (World Bank 1994).

As of 1996, Colombia spent approximately 10.1% of its GDP on health, including 4.1% on the public sector and 6% on the private sector. Of public expenditures on health, 39% were made at the national level, 45% at the departmental level, 9% by the municipalities, and the remaining 7% by special entities such as the armed forces and ECOPETROL (BID 1998). According to the National Health Accounts Report based on results for 1993, the total health expenditure was 3 trillion pesos or 7.3% of GNP. The primary sources of this figure were families (53%), business firms' expenditures (19%), the national budget (16%), departmental revenues (8%), and municipal budgets (2%) (NHA 1997). According to the World Bank Report, in 1994 65% of the population was covered by public health services, with 18% using social insurance services, and the remaining 17% attended by the private sector. According to the most recent data from 1999, approximately 41% of Colombians are enrolled in the Contributory Regime (an obligatory universal social insurance system where contribution is shared between employee (4%) and employer (8%)) and 21% are eligible for a subsidized regime. In 1998, Instituto de Seguridad Social (ISS) covered approximately 61% of the contributory regime, which was about 23% of the total population. The rest of the population relied mainly on private insurers (MOH Official, Congreso de la Republica, 1998).

Social insurance services are provided through the ISS for private employees, the CAJANAL for public sector employees, and approximately 300 other institutions affiliated with particular sectors or parastatal enterprises. The social insurance system has recently experienced a dramatic expansion through the implementation of a "managed competition" model incorporating private and semi-public insurance and managed care organizations and cross-subsidies to the poor This is a dramatic change for Colombia. For the "contributory regime", by 1998 there were 28 EPS (both public and private managed care organizations called *Entidades Promotoras de Salud*). Public plans called *Empresas Sociales de Salud* (ESSs), along with the EPSs, also provided insurance for the poor "subsidized regime". This insurance expansion has not only been felt in terms of an increase in the number of providers, but also in terms of geographic location and

coverage. Through the reform, Colombia has experimented with increasing financial resources for these providers.

In the period between 1980 and 1992, there has been sustained growth in public sector resources devoted to health, with an average annual increase of 3.3%. In this period, public expenditures on health increased from 2.3% to 3.7% of GDP, but due to population increases per capita spending has enjoyed only modest real growth from US$15 to US$16 (World Bank 1994). In 1993, more than 7.3% of Colombia's GDP was spent in health (Harvard 1996). The social insurance sector's share of health resources has increased from 50 to 55 percent, due to the reform, while public health services proportion has decreased from 36 to 29 percent (World Bank 1994).

Beginning in the early 1980s Colombia has gone through one of the most radical processes of fiscal, political, and institutional decentralization in the hemisphere. The aggregate effect of this decentralization process has been a reassignment of government functions and responsibilities between the national, departmental, and municipal levels, each level presided over by democratically elected representative institutions. The national government has attempted to transform itself from the near exclusive public service provider to a smaller and "leaner" institution responsible for policy formulation, regulation, and public finance. At the local level, the municipal governments are to become the primary policy implementers and public service providers in those cases in which services are not privatized. The departmental governments, in this scheme, become a sort of "hinge" or coordinating nexus between the local and the national level, providing regional planning, administration, and finance, as well as some services in which economies of scale dictate a regional provider (BID 1998).

The reforms directed to this end embrace several distinct but interrelated policies: fiscal decentralization, democratization, and the devolution of public service functions, including health care, to departmental and municipal governments. The health sector has been further affected by the recent adoption of far-reaching reforms in health financing and social insurance. While these processes are both closely related and almost simultaneous, they will be examined separately in the interest of analytical clarity.

PUBLIC FINANCE & FISCAL DECENTRALIZATION

In the last decade the Colombia's public finance system has gone from one of the most centralized in the hemisphere to one of the most decentralized, in terms of resource allocation. The central share in total government revenues increased from 52% in 1929 to a peak of 84.5% in 1978 (Correa and Steiner 1994). Public expenditures were made almost exclusively through deconcentrated instances of central government agencies, and local government was responsible for only 17% of total government spending in 1973 (Nickson 1995). Through a series of legislative mandates during the decade from 1983 to 1993, this tendency was reversed in dramatic fashion. By 1997, over 42.5% of national revenues (11.6% of GNP) were being spent through autonomous and democratically elected departmental and municipal governments (Jaramillo 1997; Sarmiento and Vargas 1997).

It should be noted from the outset that the transfer of public sector resources has not been accompanied by a correspondingly radical opening of local decision space concerning taxation and expenditures. As will be demonstrated, the central government has maintained relatively strong grip on fiscal decision making through the imposition of strict ranges on taxation and

fairly detailed and rigid earmarking of transfers. First, however, the nature of the various elements of the current public finance system must be clearly understood.

The decentralization of public sector resource allocations involves a complex array of fiscal instruments including:

- Increased tax authority for local governments;
- Automatic transfers of national revenues to the municipalities (value-added tax and "municipal participation");
- Automatic transfers to the departments (*Situado Fiscal*);
- Natural resource royalties; and
- Co-financing of capital investment.

The Betancur administration (1982-1986) oversaw the first major wave of decentralization of Colombia's public finance, beginning with Law 14 (1983) which restructured the distribution of tax authority between the central, departmental, and municipal levels of government. Under this regime the central government retained control of taxation of income, value-added, sales, fuel consumption, and foreign trade, while the departments were given authority over beer, alcohol, tobacco, and some motor vehicle taxation, as well as over lotteries. Municipal governments were given control of property taxation, a special tax on gross income of industry and commerce, and motor vehicle fees, and gained authority to set tariff rates and exemptions within centrally defined parameters. Between 1980 and 1987, municipal tax revenues increased by 65% in real terms (Nickson 1995). It is noted that these increases in tributary income have been much more significant for the larger municipalities than for the smaller. In 1994 own-source tax revenues accounted for 70% of the total income of municipalities with a population of over 500,000, 44% for municipalities between 100,000 and 500,000, and only 12% in municipalities with less than 20,000 inhabitants (DNP 1995).

Under the 1968 Constitution, the financing of health and education expenditures had already been deconcentrated through the establishment of the *Situado Fiscal*. Originally, the *Situado Fiscal* was a central grant made to the departments and districts, equivalent to 13% of national revenues in 1969 and increasing to 15% in 1975. The *Situado Fiscal* was allocated through the *Fondos Educativos Regionales* and the *Fondos Seccionales de Salud*, which became the basis for the deconcentrated administration of health and education services.

Under the 1991 Constitution and Law 60, the *Situado Fiscal* was raised to a minimum of 23% of central government income in 1994, and expanded to 25.5% by 1996.

The total amount of the *Situado Fiscal* would be permitted to increase with increasing resource needs of the education and health sectors, and distribution among departments and districts was to be based on the following criteria: 15% equal sharing; 85% allotted to the preservation of the real allocations of 1993, with excess funds being divided on the basis of population to be attended and fiscal effort. In any given department or district, 60% of the *Situado Fiscal* was to be allocated to education, 20% to health, and the remaining 20% divided between the two sectors according to need. According to the law, at least half of the portion of the *Situado Fiscal* allocated for health must be devoted to primary care activities. The allocation of the *Situado Fiscal* would be controlled by the National Planning Department (DNP), and the departments were mandated to adopt plans to decentralize the resources and functions of the *Situado Fiscal* to their constituent municipalities.

Municipal resources were dramatically expanded in 1986 through the enactment of Law 12, which raised the percentage of the central value-added tax (IVA) revenues transferred to municipalities from 30% (1986) to a minimum of 50% by 1992. This was particularly important for small municipalities (population of less than 20,000), for whom it represented 70% of total revenues (World Bank 1994). The IVA-based transfer system was replaced in 1994 with the Social Investment Transfer, or "municipal participation," established by Law 60 (1993). This system allocated to municipal governments a fixed percentage of national income, starting at 15% in 1994 and increasing gradually to a minimum of 22% by 2002. These transfers are exclusively for use in "social investment," and are earmarked as follows: 25% to health; 30% to education; 20% to water and sanitation; 5% to sports and culture; and 20% to discretionary investment. The formula for distribution of the "municipal participation" is based on the Unsatisfied Basic Needs Index (INBI), poverty level, municipal population, and fiscal effort, administrative efficiency, and quality of life indicators. Municipalities were permitted to spend up to 50% of these transfers on wages and general expenditures in 1994, to decrease gradually to 0% by 1999.

In 1992-93, a system of co-financing or matching grants was established through the enactment of Decrees 2132 and 206. These grants are for capital investment only, and may amount to no more than 10% of the total income of the receiving government (municipal or departmental). Grants are organized on the basis of four distinct funds: transportation infrastructure (FIV); urban infrastructure (FIU); social investment (FIS); and rural investment (DRI). Numerous previously existing programs, including the National Hospital Fund, were replaced through this co-financing system. The system was further consolidated in 1992, when the four funds were integrated into the *Sistema Nacional de Cofinanciación* (SNC). The FIS provides infrastructure investment funding for the health and education sectors, as well as some funding for operating expenses during the initial phases of new projects.

Royalties from natural resource exploitation have consistently been an important part of local and regional government finance in Colombia, which is a major oil, coal, and mineral producer. The distribution of these revenues is currently regulated through Law 141 (1994), which calls for 68% of royalties to be retained by the producing or transporting departments or municipalities, with the remaining 32% redistributed among local governments through a national royalty fund (FNR). FNR distribution is by formula, and allocations are made according to fixed percentage set-asides to energy sector investment, environmental protection, etc. The growth in royalties received by departmental and municipal governments is summarized below in the Table 2.

Municipal and departmental governments also have access to resources through public and private credit. The *Financiera del Desarrollo Territorial, S.A.* (FINDETER) was established in 1989 as a public development bank to finance urban infrastructure at the regional and local level. Local and regional governments are also permitted to obtain credit from private or public banks, with a ceiling of 30% of regular revenues. Problems with over-indebtedness among some municipal governments have been observed (DNP 1995).

The evolution of sub-national government revenues from transfers is presented in Tables 1 and 2.

Table 1. Central Transfers to Municipal and Departmental Governments
As a Percentage of Total Government Revenues

TRANSFER	1990	1991	1992	1993	1994	1995	1996	1997
Situado Fiscal	21.1	48.5	19.1	20.1	22.1	22.8	23.8	23.8
Municipal Participation	10.4	10.0	12.4	12.8	13.0	14.6	15.7	16.7
Cofinancing	6.9	6.2	6.0	4.5	5.3	7.1	8.6	8.2
Royalties and National Royalty Fund	5.8	3.6	3.4	3.2	3.9	4.1	3.4	3.5
TOTAL	***44.1***	***38.3***	***40.8***	***40.6***	***44.3***	***48.7***	***51.5***	***52.3***

From Vargas and Sarmiento (1997)

Table 2. Relation Between Territorial Tax Revenues, Central Transfers, and Royalties
(Billions of Current Pesos)

YEAR	TERRITORIAL TAX INCOME (A)	MUNICIPAL PARTICIPATION (B)	SITUADO FISCAL (C)	TOTAL TRANSFERS LAW 60/93 "B + C" (D)	PETROLEUM ROYALTIES (E)	TOTAL TRANSFERS "D + E" (F)	TERR.TAX INCOME @ % OF TOTAL "A/F" (G)
1993	*1096.60*	*662.40*	*1072.70*	*1735.10*	*246.80*	*1981.90*	*55.33*
1994	*1386.00*	*886.40*	*1413.00*	*2229.40*	*303.50*	*2602.90*	*52.91*
1995	*1726.00*	*1192.90*	*1712.20*	*2905.10*	*409.90*	*3315.00*	*51.53*
1996	*2064.80*	*1591.20*	*2293.30*	*3884.50*	*596.70*	*4481.20*	*46.08*
1997	*2452.00*	*2020.60*	*2750.20*	*477.80*	*935.60*	*5706.40*	*42.97*
1998	*2833.00*	*2552.80*	*3291.80*	*5844.60*	*1023.60*	*6868.20*	*41.25*
1999	*3245.00*	*2974.80*	*3644.00*	*6618.80*	*1065.90*	*7684.70*	*42.23*
2000	*3681.00*	*3481.10*	*4011.10*	*7492.20*	*1104.00*	*8596.20*	*42.82*

Projected by Wiesner (1995)

It is clear from table 2 that (based on projections) fiscal decentralization and expanded transfers have resulted in not only an increase in the total revenues available to departmental and local governments (column f), but also a decrease in the relative importance of own-source revenues (column g), as Territorial Income Tax (column a) decreases as a percentage of total transfers (column f). The ratio was 55.33 in 1993 and is projected to decrease to 42.82 by the year 2000. This is further demonstrated by Table 3 which illustrates the evolution of the fiscal autonomy of municipal and departmental governments, categorized by municipality classification indicator (1 = wealthiest, 5 = poorest).[1]

[1] For explanation of municipality classification indicator see page 34.

Table 3. Fiscal Autonomy Own-source income/total Expenditures (%)

	MUNICIPALITIES			DEPARTMENTS*		
	1985	1990	1995	1985	1990	1995
Average	**46.4**	**31.1**	**23.3**	**89.9**	**74.9**	**52.9**
NBI 1	82.9	64.2	50.1	96.7	76.8	63.2
NBI 2	55.2	39.1	30.6	88.8	65.2	60.7
NBI 3	49.3	22.6	18.9	62.7	52.8	47.8
NBI 4	32.6	19.7	12.4	99.3	93.9	42.9
NBI 5	17.9	10.8	8.5			

* Excluding petroleum producing departments
Source: BID (1998)

DEMOCRATIZATION

The decentralization of public sector resources to subnational governments was accompanied by a major transformation of these institutions from bureaucratic representatives of Bogota to authentic representative governments. Prior to 1986, Colombia's local government system was highly centralized, based on presidential appointment of provincial governors, who in turn appointed municipal mayors. In 1988, popular elections for mayors were introduced under the auspices of Legislative Act No. 1 (1986). Mayors serve three-year terms and are not permitted to serve two consecutive terms. The so-called "programmatic vote" was also instituted, requiring mayoral candidates to publicize a summary of their program objectives upon which their administrations are ostensibly evaluated. Broader processes of municipal democratization accompanied the institution of mayoral elections, including the establishment of elected municipal councils. These deliberative bodies have limited authority and few responsibilities, but do exert some influence through patronage and clientelism (Fizbein 1997).

The municipal reform also provided for expanded popular participation through a number of mechanisms. Plebiscites and popular "recall" of elected officials were instituted, as was consumer participation on local public service agency boards. Local Administrative Boards (*Juntas Administrativas Locales*—JALs) replaced the old Communal Action Boards (*Juntas de Acción Comunal*—JACs) as the popular representatives at the sub-municipal level of *communas* (urban) or *corregimentos* (rural). While the JALs fell into disrepute during the late 1980s due to partisan conflict and clientelism, they were reformed through the 1991 Constitution. The functions of the JALs currently embrace social development and public working planning, monitoring and supervision of municipal public service provision and investment, making proposals for municipal investment, and the distribution of resources allocated to them through the municipal budget (Van Cott 1998).

The 1991 Constitution further expands the democratic space available to local and regional governments through the institution of popular elections of departmental governors. The democratization of departmental governments was considered significant to their establishment as the governmental interface between the policymaking national government and the municipal governments to be charged with the majority of public service delivery functions (BID 1998). The Constitution reaffirms popular participation in plebiscites, electoral

recall, and legislative initiatives, and permits the creation of new territorial entities, including regions (groups of departments), provinces (groups of municipalities), special districts, metropolitan areas, and Indian territories. These new "autonomous" entities are entitled to representation through democratically elected governments. The Constitution calls for the design, regulation, and political organization of these entities through a Law of Territorial Organization, but such legislation has yet to be enacted.

DEVOLUTION OF HEALTH SECTOR FUNCTIONS & RESOURCES

In 1987, following the institution of direct popular elections of municipal governments, and the expansion of municipal resources through increased central transfers, the Colombian government moved to devolve responsibilities for service delivery to departmental and municipal governments. Sectors slated for devolution included education, health, water, sanitation, agricultural extension, and secondary roads. This was a dramatic change from the situation leading up to the early 1980s, when local governments had few responsibilities beyond street cleaning and management of slaughterhouses and markets.

In the health sector, devolution implied the transfer of most health sector personnel and facilities to the country's 32 departmental and 1050 municipal governments (1996). Under this arrangement health sector public employees were grandfathered into the devolved system (Bossert et al. 1998). The basic distribution of responsibilities, later confirmed by Law 60 ("Ley de Competencias y Recursos") is as follows:

- Central: Management of national programs and campaigns for health and sanitation
- Departments: Provides secondary and tertiary health services through regional, specialized, and teaching hospitals, and manages health programs and campaigns in coordination with or on behalf of the national government.
- Municipal: Provides primary and secondary care through local health centers, clinics, and hospitals, and is involved in health promotion, prevention, and environmental health activities.

These organizational changes cannot be fully understood without also looking at the changes introduced by Law 100 passed in 1993. Law 100 introduced a system of health insurance meant to cover health care for all people in Colombia. Decentralization in Colombia is best understood by looking at the combined effect of both law 60, described here, and law 100, described later in the section on Health Sector Reform.

At the departmental level, the deconcentrated departmental instances of the Ministry of Health are in the process of being transferred to the now autonomous and democratically elected departmental governments. Evaluation of departmental preparedness to assume devolved responsibilities was overseen by the National Council of Social and Economic Policy (CONPES). The departments are to retain responsibility for secondary and tertiary care through regional, university, and specialized hospitals, as well as to operate national programs and campaigns, and execute a supervisory and management role over municipalities and hospitals in health policy, human resource management, and administration. Responsibility for primary care is to be transferred to municipal governments gradually in a phased process of certification and devolution. The nature and current status of the certification and devolution process is discussed at greater length below.

The devolution of health service delivery functions to sub-national governments was in keeping with the broad movement in the 1980s to reform Colombia's health system. This movement was referred to as the "Apertura de Salud", and has the following management objectives (World Bank 1994):

- increased access to health services;
- improved efficiency and quality of services;
- expanded citizen participation; and
- the redefinition of the health system in terms of the management of risk, behavioral, and environmental factors, as opposed to facility network.

These objectives were to be accomplished through the local provision of health services through local health administrations, in accord with the municipal health system model promoted by the Pan American Health Organization. Primary, secondary, and tertiary care provision would be separated by governmental level, with local governments providing expanded primary care services (including first level hospitals) and receiving dedicated resources for this purpose. The system of public sector health finance would be reorganized to separate municipal primary care resources from higher level resources, thus overcoming the traditional concentration of expenditures at the secondary and tertiary level in the larger urban centers (World Bank 1994).

In 1990, Law 10 established a fiscal regime to finance the health service delivery functions recently devolved to departmental and municipal governments. This legislation provided national support for decentralized health programs through the establishment of ECOSALUD, a national monopoly on new lotteries and gambling activities. The law also called for the establishment of separate accounts for health resources at the departmental and local levels, permitting more effective earmarking and control of health funds. Thirdly, the National Hospital Fund (FNH) was created to promote investment in health infrastructure and provide health sector related supervision and technical assistance to departmental and local governments. As was mentioned above, the FNH was succeeded in 1992-3 by the Fondo de Cofinanciación de Inversión Social (FIS) under the rubric of the Sistema Nacional de Cofinanciación (SNC).

Law 10 also provides the basis for institutional decentralization of hospital facilities. In 1975, the establishment of the National Health System had brought with it the nationalization of municipal and departmental health facilities which constituted the majority of Colombian hospitals at that time. Laws 10 and 60 mandated the separation of hospitals from direct administrative dependency on the departments, and granted them legal status and financial and managerial autonomy. To prepare these facilities for competition with the private sector under the reformed social insurance scheme, Law 100 of 1993 permitted the conversion of hospitals to semi-public entities referred to as Empresas Sociales del Estado (ESE). Under this legislation, Level II and III hospitals are to be governed by autonomous boards including one-third membership from community representatives, one-third from the scientific/medical sector, and one-third from the political administrative sector. Hospital directors are to be designated by the mayor or governor under whose jurisdiction the hospital falls, and are to serve renewable three-year terms. There have been significant obstacles to the transformation of public hospitals, including the major financial liabilities associated with pensions, severance

pay, etc.[2] Nonetheless, by 1996, 87% of Level II and III hospitals had converted from government facilities to ESEs and had gained legal status and fiscal and managerial autonomy. By this time, fully 32% of all hospitals receiving public funding were contracted non-governmental facilities (Harvard Final Report 1996).

The "Ley de Competencias y Recursos" (Law 60, 1993) regulates the distribution of decentralized functions and resources affirmed in the 1991 Constitution. With specific respect to the health sector, Law 60 confirms the devolution of responsibilities instituted in 1987. As was mentioned above Law 60 earmarked 25% of the "municipal participation" in national revenues to health sector activities. Of this 60% (15 points) are to be allocated to "subsidized care" and 40% (10 points) to staff, infrastructure, etc.

The total amount of *Situado Fiscal* received by the department is determined as a minimum share of the nation's total current revenues (23% in 1994, 24.5% in 1996, etc.). The *Situado Fiscal* is partitioned in equal parts among all departments and districts according to certain calculations based on inflation and a per capita formula. Twenty percent of this amount must be devoted to health. Of this 20%, the departments retains 50% and the municipality or municipalities under its jurisdiction, if they are certified, receive the other 50%.

The current sources of health financing for municipal and departmental governments are summarized in Table 4 on the next page:

[2] It is estimated the public hospitals have liabilities exceeding US$ 1 billion, owed to 158,000 functionaries (Vargas and Sarmiento 1997).

Table 4. Current Sources of Municipal and Departmental Health Financing

TERRITORIAL LEVEL	REVENUE SOURCE	DESCRIPTION
Municipal	*Situado Fiscal*	50% of the health allocation within the departmental SF transfer (i.e. 50% of the 20+% allocated to health) Distribution determined by negotiation prior to municipal certification
	Municipal Participation	Overall municipalities must receive 25.5% of national income 12.5-25% of this transfer (depending on category of municipality) must be spent on health
	ECOSALUD	Resources from national lottery and gambling enterprise, transferred to municipalities exclusively for health financing
	Own-source	Resources from municipal budget or user fees in health facilities
	Cofinancing	Matching grants for capital investment obtained from *Fondo de Cofinanciación de Inversión Social/Red de Solidaridad Social*
	Credit	Obtained from public or private banks
	Royalties	15% of the resources received from taxes on petroleum production for certain wells is dedicated to health
Department	*Situado Fiscal*	50% of the *Situado Fiscal* allotted for health (i.e. 50% of the 20+% allocated to health)
	Ceded Revenues	• liquor sales tax (35%) • beer sales tax (8%) • lottery winners (17%) • sale of foreign lotteries (7.5%) • gambling tax (7.5%)
	Own-source	Resources from departmental budget or from health facility user fees
	Cofinancing	Matching grants for capital investment obtained from *Fondo de Cofinanciación de Inversión Social/Red de Solidaridad Social*
	Credit	Obtained from public or private banks
	Royalties	15% of the resources received from taxes on petroleum production for certain wells is dedicated to health

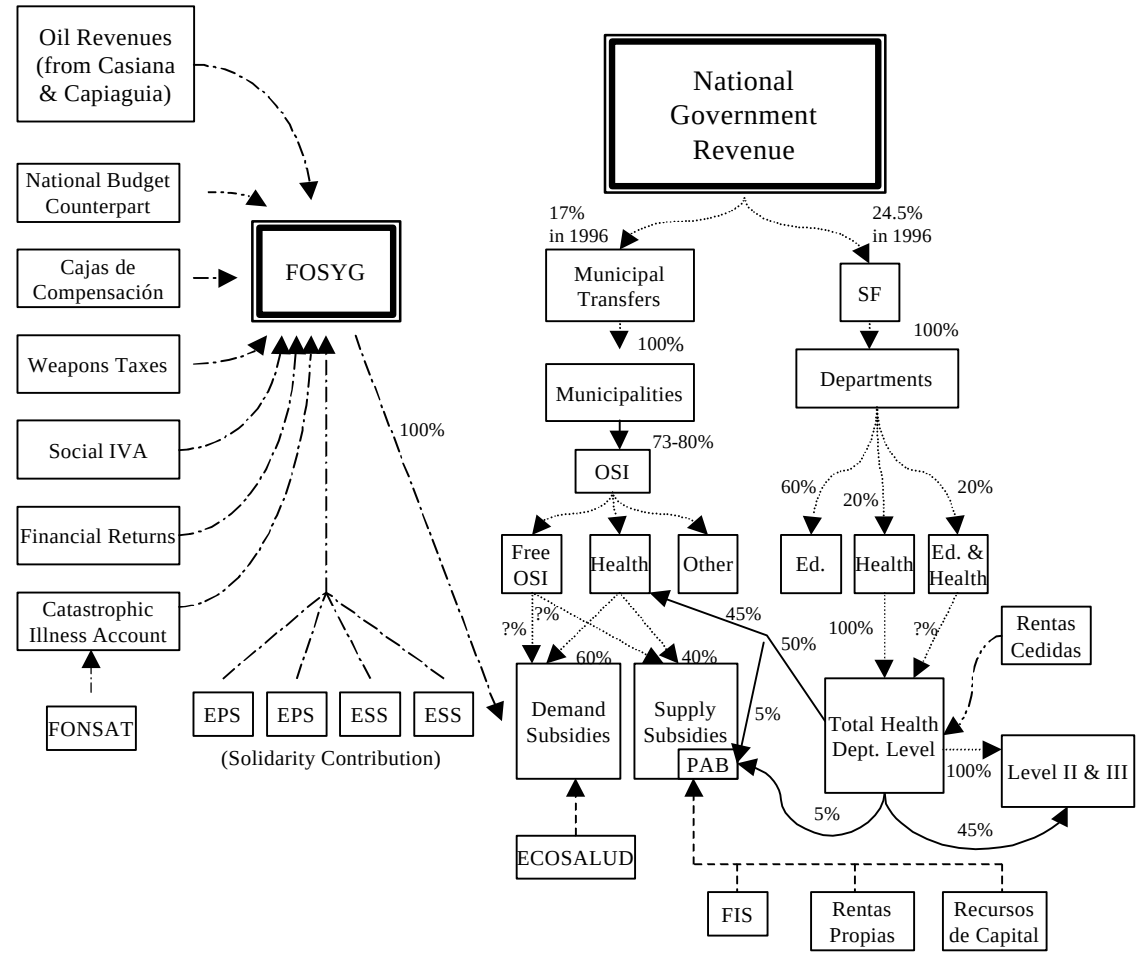
Source: Vargas and Sarmiento (1997)

The level of decentralized (departmental or municipal) health spending as a percentage of GNP) increased by 27 times between 1990 and 1997, rising from 0.44% to 1.18% of GNP. An additional 0.4% of GNP is spent through social insurance at the departmental and municipal levels (Jaramillo 1997). As of 1996, the distribution of health spending by territorial level was as follows:

- National: 17%
- Departments: 69%
- Municipalities: 14%

Even if all municipalities are ultimately certified and health sector functions and resources are devolved to them the distribution of health expenditures would remain relatively concentrated at the departmental level as should be expected with departmental responsibility and higher expenditures in Level II and Level III hospitals. The national share of expenditures would remain 17%, while departments would spend 56% of health resources, and municipalities would gain control of 27% of health spending (Vargas and Sarmiento 1997).

Figure 2. Financial Flows: Colombia's Health Sector



KEY

SF = Situado Fiscal
Ed. = Education
PAB = Plan de Atención Básica
OSI = Obligatory Social Investment
FOSYGA = Fondo de Seguridad y Garantía
FIS = Fondo de Inversión Social

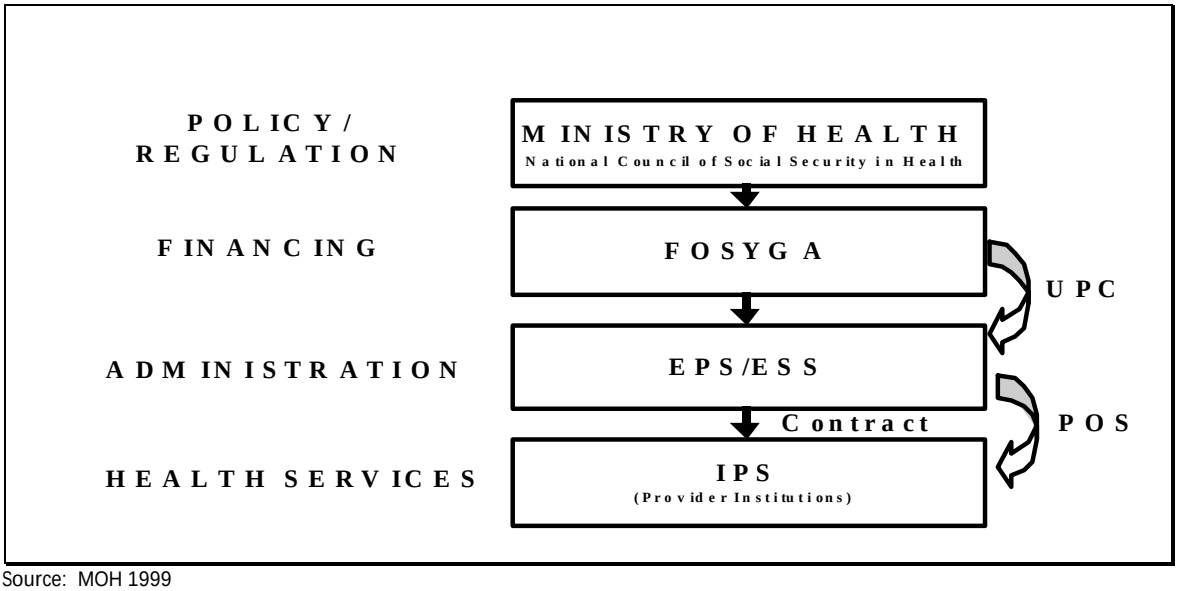
..... = Direct Government Transfer
——— = Gov't revenue allocated to Situado Fiscal
—·—·— = Revenue from earmarked taxes (rentas cedidas)
– – – – = Revenue from other sources

HEALTH FINANCE REFORM

The complicated interaction between health sector devolution and fiscal decentralization discussed above has been made significantly more complex by the implementation of a national health insurance plan in 1993. Law 100 of 1993, institutes a "managed competition" model of health insurance finance through the promotion of autonomous insurance and managed care organizations. This model seeks to finance the health sector through demand subsidies that place resources at the disposition of the consumer, thus providing the public with greater choice and promoting quality and efficiency through competition. The consumer-based demand subsidy concept is at odds with the pre-existing territorially based system of supply subsidies (transfers and government treasury allocations) to provider institutions. As will become evident, the harmonization of the devolution and health finance reform processes has become a major challenge.

The system instituted by Law 100 is organized to serve three groups: two permanent and one transitory. The contributory regime is for all employees earning over two times the minimum wage. The subsidized regime is for poorer Colombians. The transitory regime *(Vinculados)* is for the poor that are not yet affiliated with either the contributory or subsidized regimes. Employees in the contributory regime, contribute 12% of their earnings. This contribution is shared between employee (4%) and employer (8%) and is capped at 20 times 12% of the minimum wage. The payroll deduction is divided, with 11% being used to finance coverage for contributing employees. Contributors select freely among an array of private managed care organizations known as *Entidades Promotoras de Salud* (EPS). The EPSs retain a risk-adjusted capitation rate (*Unidad de Pago por Capitación*—UPC) for each beneficiary enrolled, and transfer any surpluses collected to the governmental *Fondo de Seguridad y Garantía* (FOSYGA). The EPSs are obligated to finance a package of basic services known as the *Plan Obligatorio de Salud* (POS), obtainable through affiliated service provider institutions (ISPs). Contributors may also elect to pay an additional fee for complementary plans providing an expanded package of services. The general scheme is summarized in the following figure (MOH 1999).

Figure 3. Colombian Health Insurance System



Source: MOH 1999

Meanwhile, the remaining 1% from the payroll contributions is reserved as a cross-subsidy, which along with national treasury contributions is used to finance the subsidized regime—the poorest portion of the population, identified by a means test census called SISBEN. In the initial years of the implementation of this reform were two types of insurers available to the subsidized regime. There was a network of autonomous public managed care organizations referred to as *Empresas Solidarias de Salud* (ESS) created to serve as insurance entities for this regime. The ESS were mandated to enroll non-contributor beneficiaries for whom they provide a more limited package of services known as the *Plan Obligatoria de Salud—Subsidiado* (POSS). There were also the *Cajas de Compensación Familiar*. Later EPSs that desired were also allowed to offer this POSS to the subsidized population.

All insurance coverage was to provide for the *Plan de Atención Básica* (PAB) which covered immunizations and other basic primary care services. The PAB was to be provided by the municipalities. Both EPS/ESS freely contracted with public and private providers in order to obtain the required service package. All the insurance entities that offered any type of service to the subsidized regime were collectively known *as Adminstradoras del Régimen Subsidiados* (ARSs).

As of 1998, there were 28 EPSs operating, covering approximately 16.4 million people within the contributory regime. There were 250 ARSs which covered about 8.5 million within the subsidized regime. The ARS included both some of the EPS, including many private insurers, as well as the public ESSs. The two regimes covered approximately 60% of the population and 66.5% and 53.0%, respectively, of their objective populations (MOH, 1998). Private insurance companies and HMOs covered about1.5 million in 1996 (4% of the population) (Harvard 1996). One of the major obstacles to EPS/ESS expansion has been the issue of the so-called *vinculados*. This group consists of the lower-middle income group of the population that is on the border between the contributory and subsidized regime, corresponding to SISBEN stratum three. The *vinculados* are not required to make payroll contributions, but have full access to public sector services with a 30% co-payment (the remainder being paid for by supply subsidies). There is no register of the *vinculados*, so all comers are accepted, and exemptions from the co-payment are frequent. A study done by the BID in 1998 enumerates several disadvantages of this policy:

- It produces a disincentive to enrollment in the contributory regime for those who can receive free or nearly free services through claiming to be *vinculados*;
- It discourages formal affiliation to the subsidized regime, because the *vinculados* have access to a broader range of services than those who are formally affiliated to the EPS/ESS; and
- It perpetuates supply subsidies and hurts those public hospitals attempting to transition away from subsidies to reliance on payment through insurance.

More important in relation to the decentralization process, is the fact that the "social insurance" health financing scheme introduced through Law 100 was developed separately from the "territorial" intergovernmental transfer scheme established through Laws 10 and 60. Not surprisingly, the harmonization of the two mechanisms has become an issue of considerable complexity. The social insurance scheme is based on demand subsidies and engages a plethora of private and semi-private institutions in "managed competition", whereas the territorial regime was designed for the supply subsidy direct budget transfer to public sector providers. The government's objective has been that ultimately the departments and municipalities administer the social insurance regime in a decentralized manner. Departments

and municipalities are to be responsible for administering the SISBEN, registering the beneficiary population, and encouraging enrollment in the EPS/ESS operating in their territory.

It is projected that the transfers which the departments and municipalities now receive as supply subsidies to public sector facilities will gradually be converted to demand subsidies for the subsidized regime channeled through the social insurance institutions. Beginning in 1997, 25% of the *Situado Fiscal* dedicated to health was to be shifted from supply subsidies to demand subsidies to insure the poor by way of the new social insurance scheme. Ultimately, 90% of the health proportion of the *Situado Fiscal* and 100% of the health proportion of ceded revenues are to be devoted to demand subsidies for the poor (Sarmiento and Vargas 1997). These transfers however have not been distributed as planned. Only 18% was transferred to demand side subsidy by 1999 (Giedion 2000). Meanwhile, 60% of the health allocation in the "municipal participation" transfers are to be dedicated to demand subsidies (i.e. 15% of the total "municipal participation").

As public sector facilities are "weaned" from direct governmental transfers and EPS/ESS enrollment is expanded, the need for supply subsidies will diminish. The development of formal association with social insurance institutions is one of the requirements for "certification" of departments and municipalities for decentralization, described at greater length below.

IMPLEMENTATION ISSUES

As mentioned above, Law 60 establishes a "certification" procedure for local governments as a prerequisite for devolution of health sector responsibilities and resources. The certification process is overseen by the Directorate of Decentralization of the Ministry of Health and requires the establishment of the following:

- A local health authority within the municipal government;
- A separate government account for the local health fund;
- A civil service corps dedicated to health service administration and delivery;
- Mechanisms for community participation in health sector management;
- Definition of institutional affiliation and linkages for referrals, payment, etc.;
- Payment regime to social insurance benefit funds (discussed at greater length below).

While larger municipalities (population greater than 500,000) have been quick to seek and obtain certification, the process has proved more problematic for smaller municipalities. In the period between 1990 and 1997, only 320 of the 1070 municipalities had been certified (Yepes 1998). However, it must be noted that these were the primarily in the most populous, urban areas so that they account for some 60% of Colombia's population and 60% of the resources allotted to "municipal participation" in national revenues (Jaramillo 1997). Moreover, many "uncertified" municipalities do offer services on behalf of or in conjunction with their local departmental health centers (SSSs).

Some problems have been identified in the certification and devolution process. In many cases, the slow pace of certification and devolution may be due to the rigor and complexity of certification requirements that weigh more heavily on smaller, poorer municipalities than on the larger and wealthier municipalities, which have led the way in devolution. Moreover,

because municipal receipt of the Municipal Transfer is not contingent upon certification and devolution of services, many municipalities can control part of the budget and have less incentive to assume formal responsibilities. In other cases, the departmental governments that oversee the certification process appear to have actively discouraged devolution, preferring to administrate and control the *Situado Fiscal* directly. More recent central level economic crises have also caused some central authorities to be concerned with potential fiscal destabilization from decentralization. For instance, in 1999 the public debt for municipalities and departments rose to 7.45% of the GDP. Some of these central authorities have proposed recentralizing some decentralized entities.

Municipal government compliance with health sector set-aside and earmarking requirements has been mixed. A 1995 evaluation conducted by the DNP found that municipal governments are spending an average of 7.3% less than the required 25% of the "municipal participation" on health, more than the required set-aside is being directed to sports and culture. There is a marked distinction between the compliance of municipalities with greater than 500,000 inhabitants and those with smaller populations. While the larger municipalities have complied with the required 25% set-aside for health, the smaller municipalities did not do so. Moreover, while larger municipalities spend health resources primarily on technical personnel (75%), the smaller municipalities spent 39-60% of health resources on infrastructure. These differences may be attributable to a number of factors. Low compliance in the smaller municipalities may be the result of confusion regarding complex regulations, as well as limited absorptive capacity among these municipalities, 95% of which have not yet assumed direct responsibility for service provision (DNP 1995). On the other hand, heavy investment in infrastructure in smaller municipalities may be due to greater need, or may be the result of political pressures for public works projects. Alternatively, the underspending may have been only a transitional problem of the initial implementation of the complex regulations.

POLICY PROCESS & HISTORY OF DECENTRALIZATION

HISTORICAL TRENDS: FEDERALISM AND PARTY POLITICS

The politics of Colombia's recent decentralization reforms have a long and complex history, beginning with the country's origins in the early 19th century and culminating in the dramatic economic and political changes of the 1970s and 1980s. Much of this history is characterized by alternating periods of centralization and decentralization as ruling parties have attempted to strengthen their power base through the manipulation of public finance and political space.

Following independence from Spain in 1810, Colombia was constituted as a federal nation state with highly autonomous departmental governments. The country's 29 federated provinces had total fiscal autonomy and their own-source revenues accounted for over 50% of resources transferred to the central government (Correa and Steiner 1994). In the wake of ensuing civil war and interregional conflict, the 1886 Constitution established a unitary state, stripping departmental and local governments of much of their fiscal and political autonomy and centralizing power in the national government. The country's then 24 departments and the "national territories," established in the less developed hinterlands, were ruled by centrally appointed governors who effectively controlled the elected departmental assemblies. Revenues from tobacco and alcohol were centralized as was tax authority, and the departmental share in central government revenue decreased from 27% to 14% between the 1880s and the first decade of the 1900s (Correa and Steiner 1994).

The period from 1890 to 1930 saw a return to greater decentralization, as the central government returned some tax revenues and administrative authority to local governments. During this period the municipal share of total government revenues increased from 27 to 48 percent. This trend was again reversed in the following fifty years, with central government share in total revenues rising from 52% in 1929 to a peak of 84.5% in 1978. This period was accompanied by a corresponding centralization of administrative responsibilities and local governments were effectively reduced from administrative to territorial units, with little or no responsibility for service delivery (Nickson 1995). By the 1970s and 1980s, the effects of fiscal and administrative centralization on public services precipitated a crisis in governmental legitimacy.

PUBLIC FINANCE REFORM AND MUNICIPALIZATION IN THE 1980S

The secondary literature provides little substantive analysis of the policy process involved in the decentralization reforms of the late 1980s and early 1990s. It is clear that the civil unrest of the 1970s and 1980s, played a strong role in the initiation of fiscal decentralization and devolution which occurred in 1983-1993 period. This was evidenced in widespread civic strikes, over 200 of which occurred between 1970 and 1986. These protests involved the middle class and regional elites alongside the poor in protests against the lack of government services and the concentration of government resources in the largest cities (Collins 1988).

It is also noted that the decades of the 1960s and 1970s constituted a period of intensive urbanization and transformation of the national economy. This transformation was associated with the rise of power that economic elites in cities other than the capital, including Cali, Medellin, and others. These regional stakeholders were influential in pressing for the decentralization of resources and the broadening of political space in departments outside the capital district (World Bank 1994).

International influences were also significant in the reform and decentralization of Colombian public finance initiated in the early 1980s. A major World Bank study undertaken in the late 1970s ("Bird-Wiesner Report") focused attention on the growing fiscal crisis of local governments. This crisis was associated with dependency on central transfers, as well as inefficient and often highly indebted parastatal enterprises associated with local governments (Nickson 1995).

Modernizing elements within the ruling Conservative and Liberal parties sought to reform the Colombian state to address the growing unrest and lack of governmental legitimacy. Jaime Castro, a former minister of government, was one of the key architects of the reform movement which incorporated the following elements (Nickson 1995):

- Direct election of municipal mayors;
- Local referenda;
- Continuing fiscal decentralization to the municipal level;
- Administrative decentralization; and
- Community participation.

These became the guiding principles of the municipal reform enacted through the 1986 Legislative Act. No. 1 and the new Código Municipal No. 1333. The institution of direct mayoral elections removed the mayor from the former role of departmental employee and representative, and consolidating the office of executive head of the municipal government. The municipal treasurer now became a mayoral appointee.

Clearly, municipal democratization has had significant effects on local administration and politics. Most of the mayors who came to power in the early elections were "political outsiders" with backgrounds in the private sector. Fizbein (1997) points to widespread evidence of innovation and improved governance at the local level as a result of electoral competition. No systematic or quantitative data is available to confirm these case study results or to determine what level of variation in performance exists among municipalities. Opinion polls have shown that a majority of those surveyed consider municipal governments to have a central role in public service provision (education, water, roads), and moreover that they trust local government more than the national government (Fizbein 1997).

THE 1991 CONSTITUTION

With reference to the health sector, the 1991 Constitution acts to reinforce and consolidate the trend toward public finance decentralization and devolution begun in the 1980s. By calling for the enactment of the "Ley de Competencias y Recursos" (passed as Law 60 in 1993), the Constitution guarantees an expansion of the transfer of resources and responsibilities to municipal and departmental governments. The expansion of local democratic space is also relevant to the health sector decentralization process, particularly through popular participation on local health sector user boards, etc. Moreover, the

Constitution's institution of direct election of departmental governors is seen by some as having shifted the dynamic of decentralization away from the "municipalization" seen in the 1980s and toward stronger departmental authority in public finance and administration (Nickson 1995). While the larger municipalities (population over 500,000) and special districts may be exceptions to this trend, the departmental control of the devolution process discussed above would seem to bear this observation out.

Much has been written about the political context and process of the Constitutional reforms, mostly focusing on the crisis of legitimacy of the Colombian state and the traditional parties in the preceding decades. This crisis centered on the growing violence, loss of control, and lack of effective governance associated with the rise of the drug cartels and guerilla movements in the 1970s and 1980s. Modernizing factions within the traditional Conservative and Liberal parties saw that a transformation from a representative to a participatory democracy was necessary in order to strengthen the state and recover governmental legitimacy (Van Cott 1998). These elements espoused constitutional reform as the means to achieve an effective opening of Colombian political culture and a renovation of the state. After several unsuccessful attempts, a Constituent Assembly was convened in 1990, with impetus from the student movement and strong backing of the Barco administration.

Due to a complex constellation of historical and political factors, the Constitutional Assembly was heavily influenced by "outsider" parties, notable among which was the recently demobilized guerilla movement known as M-19 now reborn as the civilian leader of the political left. The low proportion of delegates from the Conservative and Liberal parties forced them to divide themselves and focus on issues of the greatest importance. As a result the Conservatives, traditional proponents of centralization, had relatively weak membership on Commission II of the Constitutional Assembly, charged with matters of territorial organization. This left the liberals and smaller parties to consolidate the territorial decentralization reforms begun in the mid-1980's and now expanded in the 1991 Constitution.

HEALTH FINANCE REFORMS

The health insurance/finance reforms enacted through Law 100 have their own distinct history and logic, which began, not in the health sector, but in the national pension system. The reforms were based on the leadership of then Minister of Health Juan Luis Londoño, a Harvard-educated economist with both technocratic and political skills who had been at the center of the National Planning Department's (DNP) efforts to modernize the Colombian state. In collaboration with a small group of technocrats empowered under the Gaviria administration, Londoño sought to revolutionize the Colombian health and social security system, which as of 1990 was clearly lagging behind regional standards in terms of both coverage and efficiency.

The reform had as its objectives: increased equity through broadened coverage, access, and cross subsidies to the poor, and improved efficiency, financial soundness, and quality of services through the introduction of managed competition among both providers and payers. It is noted that this process, begun in the early 1990s and against the background of Constitutional reform, was almost completely independent from and unaffected by the parallel decentralization reform process.

Bossert et al. (1996) have identified a number of institutional problems with the health reform. First, the primary institutions created to oversee the implementation of the reform policy are effectively dominated by the Ministry of Health. The National Council of Social Security in Health is presided over by the Minster of Health and includes representatives of

other relevant ministries, levels of government, insurers, providers, and beneficiaries. The Council is charged with consensus building and policy making in reference to the reform process, but it is noted that the MOH has effective veto power over its decisions. The Superintendent of Social Security in Health was established as a semi-autonomous agency with the mandate of performance monitoring, licensing health plans, data collection, and oversight of the social security system and institutions. Its affiliation with the MOH, however, effectively limits its autonomy. Another problem concerns the high turnover of staff at the management level in the MOH. This has prevented effective continuity and stability in the implementation of the reforms. Finally, the MOH established no administrative unit within the MOH with the analytical capacity necessary to undertake the reform. Meanwhile the grandfathering of personnel and extensive reliance on consultants has prevented the reforms from achieving the bureaucratic streamlining and improved efficiency that was hoped for. The centralization of health finance decision-making and the MOH's control over departments and municipalities in this respect is another issue of concern, and one which is considered to have hindered progress toward the goals of Law 60.

ANALYSIS OF DECISION SPACE

Figure 4. Formal Decision-Space Map of Health Care in Colombian Municipalities as defined by Law 60 prior to Implemetation of Law 100 (1993-1995)

FUNCTIONS	RANGE OF CHOICE		
	NARROW	MODERATE	WIDE
Finance			
Sources of Revenue	Earmarked Intergovernmental transfer: Percentage of "Municipal Participation" and other local taxes "forced" to be assigned to health.		
Expenditures			Allocation of expenditures according to local criteria (subject to technical provision norms)
Income from Fees	No Fees for municipal services		
Service Organization			
Hospital Autonomy	Formally allowed but no enabling regulations		
Insurance Plans	No separate insurance		
Payment Mechanisms	Direct budget payments to public providers		
Required Programs & Norms	Determined by Ministry of Health		
Human Resources			
Salaries	Salary scales determined by MOH in negotiation with unions		
Contracts		Minor use of contract employees	
Civil Service	New national civil service hiring and firing rules imposed with grandfathered protection for current employees		
Access Rules			
Targeting	Free access for public health system beneficiaries		
Governance Rules			
Local Government			Mayors directly elected
Facility Boards	None		
Health Offices	District offices basically transferred from MOH to municipal government		
Communit y Participation			At discretion of municipality

Figure 5. Formal Decision-Space Map of Health Care in Colombian Municipalities after Implemetation of Law 100 in 1995

FUNCTIONS	RANGE OF CHOICE		
	NARROW	MODERATE	WIDE
Finance			
Sources of Revenue		*Situado Fiscal* earmark allows range of choice of assignment to health and education.	
Expenditures		Assignment earmarks for "demand side subsidy" to insurers and set aside for PAB (promotion and prevention)	
Income from Fees		Facilities can negotiate contracts with insurers and retain some fees -- municipal participants on boards influence decisions. In practice, co-payments and insurance tariffs are established by central level and tend to be respected.	
Service Organization			
Hospital Autonomy	Hospital autonomy defined by national law -- no choice at municipal level		
Insurance Plans	Social insurance system defined by national law		
Payment Mechanisms		Some payment mechanisms negotiated between facility and insurers (municipal participates on facility board). Direct budget payments determined by municipal government	
Required Programs & Norms	Determined by Ministry of Health		
Human Resources			
Salaries	Salary scales determined by MOH in negotiation with unions		
Contracts		Expanded use of contract employees	
Civil Service	New national civil service hiring and firing rules imposed with grandfathered protection for current employees		
Access Rules			
Targeting	SISBEN means test defined nationally and required to be implemented by municipalities		
Governance Rules			
Local Govn't			Mayors directly elected
Facility Boards	None		
Health Offices	Municipal Offices transferred from District offices of MOH		
Community Participation			Community participation at discretion of mun's

Figure 6. Simplified Decision-Space Map of Health Care in Colombian Municipalities as defined by Law 60 prior to Implemetation of Law 100 (1993-1995)

FUNCTIONS	RANGE OF CHOICE		
	NARROW	MODERATE	WIDE
Finance			
Sources of Revenue	•		
Expenditures			•
Income from Fees	•		
Service Organization			
Hospital Autonomy	•		
Insurance Plans	•		
Payment Mechanisms	•		
Required Programs & Norms	•		
Human Resources			
Salaries	•		
Contracts		•	
Civil Service	•		
Access Rules			
Targeting	•		
Governance Rules			
Local Government			•
Facility Boards	•		
Health Offices	•		
Community Participation			•
Total Decision Space	11	1	3

Figure 7. Simplified Decision-Space Map of Health Care in Colombian Municipalities after Implemetation of Law 100 in 1995

FUNCTIONS	RANGE OF CHOICE		
	NARROW	MODERATE	WIDE
Finance			
Sources of Revenue		•	
Expenditures		•	
Income from Fees		•	
Service Organization			
Hospital Autonomy	•		
Insurance Plans	•		
Payment Mechanisms		•	
Required Programs & Norms	•		
Human Resources			
Salaries	•		
Contracts		•	
Civil Service	•		
Access Rules			
Targeting	•		
Governance Rules			
Local Government			•
Facility Boards	•		
Health Offices	•		
Community Participation			•
Total Decision Space	8	5	2

Law 60 greatly increased the decision making power of the municipality. This law allowed the central funding, *Situado Fiscal*, to be transferred, for the first time, directly to municipalities. Before 1993, all funding for health care was transferred directly to the departments, who then had the authority to decide to allocate the *Situado Fiscal* funds directly to hospitals in the municipalities under its jurisdiction or not. After 1993, those municipalities that did not become certified were not authorized to manage *Situado Fiscal* funds. However, for those municipalities that did become certified, the *Situado Fiscal* was now transferred directly from the central government to the treasurer of the municipality. The municipality became the decision-maker in terms of allocating the *Situado Fiscal* to hospitals and health care facilities. These certified municipalities had more power to use this money for health care in the manner they desired. It should be noted however, that certification only affected the *Situado Fiscal* funding -- the most significant funding assigned to health -- but it did not restrict municipal control of the "participacion municipal" transfer or Social Investment Transfer.

Formerly known as the Central Value-added Tax, under Law 60 this transfer was assigned in increasing proportions from 1994 to 2002. A certain percentage of the “participación municipal” was earmarked to specific areas. As of 1993, 30% was to be spent in education, 25%

in health, 20% in water and basic environmental expenditures, and 5% for sports and culture. Certified municipalities had both "particicpcion municipal" and *Situado Fiscal* to assign to local health care funding.

Departments began to become certified in 1990, under Decentralization Law 10. From this law, the departments became responsible for all secondary and tertiary health care. Certification gave the departments greater control over their portion of "*Situado Fiscal Fiscal*" funding and the right to certify municipalities in their jurisdiction.

National statistics showed that during the years 1990-1996, 390 municipalities out of 1073 were certified and along with 20 out of 34 departments.

BRIEF OVERVIEW OF METHODOLOGY OF COLOMBIA STUDY

The present study analyzed the impact of health sector decentralization presented in the decision space maps above. We gathered data at the municipal level to further support our analysis of decentralization in Colombia. The data covered the period 1994-1997 and included a total of 1080 municipalities, however the sample size varies over the analysis. The study seeks to assess the variations in resource allocations and in performance that have emerged in the process of decentralization at the municipal level.

Using the framework outlined in the introduction, the current study attempts systematically to assess the variations that emerge with decentralization at the municipal level. The framework asks two basic questions: 1) what kinds of choices did local governments make now that they had additional discretion (wider "decision space")? And 2) did these choices make any difference in the performance of the system in terms of equity, efficiency, quality and social soundness? This was an exploratory analysis which depended the data available at the national level.

The data we used was gathered in Colombia from several national sources. The National Statistics Office provided the data on municipal population, urbanization, poverty level, and economic level. The Office of the Ministry of Health provided the data on which municipalities and which departments had been certified (including the exact date of certification), what type and the quantity of health care services are offered in each municipality, human resource data, hospital funding and expenditure information, and the number of residents enrolled in the subsidized national health insurance program funded by FOSYGA. The Territorial Development Unit of the National Planning Department provided all the municipal financial information, excluding hospital information. The Inter-American Development Bank provided the data on number and type of health care facilities found in each municipality. Information was gathered over the four years 1994-1997.

This information was first subjected to single variable analysis, followed by a more in-depth description of possible cause-effect relationships using multiple variable regression analysis. The results of this national level quantitative analysis were to be complemented in a second phase of individual case studies as has been done in companion studies in Chile and Bolivia. The increasing security problems in Colombia made it imprudent to launch this second phase of the research. Nevertheless, we have been able to take advantage of a case study done by Francisco Yepes and Luz Helena Sánchez Gómez in 1999 that provides a qualitative analysis of decentralization.

NATIONAL DATA ANALYSIS

The national level data allowed us to examine some key issues of allocation, utilization, efficiency, and human resources during the period of decentralization. As noted above decentralization came to municipalities in a series of laws that devolved control over different functions at different times. However, one of the major changes in health care decentralization came with Law 60 in 1993. This law now allowed certified municipalities to receive the central fund, "*Situado Fiscal*", that formally was only given to departments. *Situado Fiscal* was a major source of funding for health care at the municipal

level, although municipalities also received funds from Municipal Transfers, such as the "municipal participation" which they could allocate to health care. We hypothesize that certified municipalities would have more discretion in decisions about health care allocations and that this discretion might produce different allocation decisions than municipalities that did not have as much choice over allocations. Advocates for decentralization would expect that greater local choice (wider "decision space") would result in allocation decisions that favor the health system goals of equity, efficiency, quality and financial soundness. In this context that might mean assigning higher allocations of total municipal general expenditures to health care rather than to other municipal sectors. It might also mean spending more on promotion and prevention. Of course, critics of decentralization might hypothesize the opposite so we will start with a null hypothesis: **Certified municipalities will allocate municipal resources to health at the same level as non-certified municipalities.** Our data also allows us to look at the length of time a municipality has been certified to see if municipalities with longer experience with decentralization are any different from other municipalities.

Further complicating the picture, the certification process for departments may also have had an effect on municipalities. Departments were also assigned new functions by Law 60 and they were certified by the central government to assume these functions. As for municipalities, certification of departments also was a lengthy process for many departments with some receiving certification long before others. Certification allowed the departments more discretion over allocating department resources to the municipalities and it also granted them the authority to certify their own municipalities—an authority previously exercised by the Ministry of Health until departments were certified. Again a null hypothesis seems most appropriate: **Municipalities in departments that are certified will not allocate resources in a manner different from municipalities in non-certified departments.**

Of course there may be other explanations for allocation decisions and we will also examine the impact of total municipal income (do wealthier municipalities assign more or less to health?); poverty (do municipalities with fewer inhabitants living in poverty assign more or less to health?); population size (do large cities assign more or less to health?); and urbanization (do rural areas assign more or less to health?) Other studies suggest that **wealthier municipalities, those with larger populations and those, which are more urban, will assign greater portion of their income to health** (Bossert et al. 2000).

In addition it is possible that the social insurance reforms imposed by Law 100 and implemented in 1995, might have an influence on how localities make decisions. Our data allow us to use the number of enrollees in the subsidized regime to assess the influence of the social insurance on utilization rates. We would expect that **higher levels of enrollees in the subsidized regime would lead certified localities to have higher utilization rates.**

Since one of the major mechanism of control of local decisions by the central government is the earmarking or set asides of central transfers to the municipalities, it is also important to examine how local authorities assign their own source revenue from local taxes and fees. This is an area in which they have full freedom of choice. They can freely assign resources to health or to other sectors. Again we have competing interpretations of how local authorities would assign their own source revenues so we will propose a null hypothesis: **Certified municipalities will assign total own-source expenditure to health at the same level as non-certified municipalities.**

In the literature on decentralization there is considerable concern about "fiscal laziness" or the pushing out of locally generated resources by intergovernmental transfers. A municipality may decide not to put its own source revenue into health because the earmarked intergovernmental transfer is "forced" to be spent on health. In this case, the central

authorities would only be substituting national resources for something that local governments might have funded with their own source revenues. Fiscal laziness argument would hypothesize that **the local contribution to health would decline as a municipality's external funding increased**.

We would also like to know how to explain allocations within the health sector. Our data allowed us to examine the portion of health expenditures assigned to the priority promotion and prevention programs. This is an important question for many public health officials. Many critics of decentralization have suggested that local authorities will prefer allocations to curative care because it is more clearly in demand by the population and major stakeholders like hospital employees and directors. Nevertheless, advocates of decentralization also argue that local governments may be more interested in improving the health of their local population and therefore make more effective allocation decisions in favor of promotion and prevention. We therefore examine the null hypothesis that **certified municipalities will assign resources to promotion and prevention in a similar manner to uncertified municipalities.**

Higher levels of health care utilization have been shown to be found in areas with a larger degree of decision space. Our data allowed us to use utilization of health care services per capita to investigate this idea. We hypothesize that **certified municipalities will have the same level of utilization of health care services per capita as uncertified municipalities.**

Efficiency in health care service is a goal of many countries and organizations. Using out data, we tried to examine the relationship between efficiency and expenditure information, municipality and department certification, and municipal characteristics such as population size and urbanity. We examined the null hypothesis that **certified municipalities will have the same level of efficiency as uncertified municipalities and that expenditure levels, population size, and level of urbanity would have no effect on efficiency.**

Within health care facilities there are several different kind of human resources, including administrative contract workers, administrative civil worker, clinical contract workers and clinical civil workers. Legislation concerning hiring and firing of personnel in Colombia is rather restrictive. While civil personnel are easier to hire, it is almost impossible to fire a civil worker. Hiring through contract is much more flexible in terms of work time and salary. We were able to use the human resource data available in our data set, even though there were quite a number of missing values. We examined the null hypothesis that **certified municipalities would have the same number of administrative and contract personnel as non-certified municipalities.**

The following analysis will first analyze the general descriptive data of the municipalities. Next, the results of eight different linear regressions will be presented. These regressions will be used to identify relationships that explain health care allocation choices, utilization of health care services, promotion and prevention expenditure, fiscal laziness, efficiency, and funding for the national health insurance system, FOSYGA. The regressions are analyzed year by year. A panel analysis is presented in Annex A.

In the initial description of municipality data below we described each dependent variable and each independent variable.

GENERAL DESCRIPTION OF THE CURRENT MUNICIPAL DATA

MUNICIPAL POPULATION SIZE

As can be seen in Table 5 below, in 1997 half of the municipalities had less than 13,703 inhabitants. Based on a population of 37,418,000 (PAHO) for 1997, in 1997 the largest municipalities represented almost 70% of the total population, while half of the municipalities made-up only 10.6% of the total population. There was an overall increase in population from 1994, when half the municipalities had less than only 13,366. From 1994 to 1997, there was an average increase of 1.96% in population size for each decile. While the largest municipalities increased by 6.9%, interestingly the smallest municipalities showed a decrease in population size by 2.6%. We also included in Table 5 a column for minimum and maximum, the smallest and largest municipal populations in each of the ten deciles. The smallest municipality had a population of 106 persons while the largest municipality, Bogota, had a population of 6,004,782. Municipal population was used as an independent variable in the regression analysis described below.

Table 5. Classification of Municipalities by Population Decile (1997)

DECILES	AVERAGE	MINIMUM	MAXIMUM	% SHARE OF TOTAL POPULATION
1 (smallest)	2756.99	106	4277	0.77
2	5268.50	4279	6360	1.51
3	7383.71	6411	8468	2.09
4	9688.21	8473	10986	2.75
5	12251.18	10989	13703	3.47
6	15624.24	13714	17727	4.43
7	20224.49	17733	23136	5.73
8	26206.75	23163	30388	7.42
9	38839.61	30402	49507	11.00
10 (largest)	241270.70	50534	6004782	68.35

Source: National Statistics Office, DANE

TOTAL MUNICIPAL INCOME

We hypothesized that municipal income would be an important factor in predicting health expenditures and performance in health sector activities for the municipalities.[3] Table 6

[3] We calculated municipal income based on available data on municipal expenditures for education, health, environment, water and sanitation, and sports and culture, plus the total revenue generated from the health care facilities in each municipality. Any municipal transfers earmarked as salaries for medical personnel were subtracted from this equation, as these funds were already included in the total revenues of the facilities. For our calculations we assumed that total revenue equaled total expenditure in each municipality. The figures we used were from the DNP, Territorial Development Department.

presents the average total income (x 1000 pesos) for municipalities ordered by income decile, and adjusted according to the consumer price index for 1997. The data showed a large gap between the first and last deciles for 1994 and 1995. The average income for the wealthiest deciles was 134.2 and 140.8 times more than the average for the poorest deciles for these two years. However it was important to note that this gap decreased in 1996 and 1997 to 104.6 and 105.3, as the income of the poorer municipalities increased more rapidly than the income of the wealthier municipalities.

Table 6. Average Total Municipal Income Decile x 1000 (in Pesos) by Income Decile, 1994-1997

DECILES	1994	1995	1996	1997
1	112502.8	164386.6	279062.5	295393.6
2	209101.4	274785	423166.8	517287
3	310189	374179.7	579834.9	725423.7
4	424599.5	503084.6	757755.9	975338.4
5	576917.4	653100.1	987933.5	1277199
6	797711	893678	1315953	1634066
7	1078166	1242598	1755378	2169283
8	1527238	1768249	2325864	2914074
9	2417716	2847391	3785907	4489197
10	15095102	23142857	29176471	31100000
Overall Average	2265219	3187299	4153171	4624618
$10^{th}/1^{st}$	134.2	140.8	104.6	105.3

Note: Municipalities that did not report income data were not reported.
Source: DNP: Territorial Development Department

This variable was used in calculating the dependent variables "total health expenditure/total general expenditure" (THE/TGE) and "total own-source expenditure/total own-source general expenditure" (TOHE/TOGE) that were used in the regression analysis[4]. The same income deciles in table 6 were used in subsequent analysis of municipal characteristics.

URBAN/RURAL MAKE-UP OF MUNICIPALITIES

We hypothesized that the percent of the population living in rural or urban areas would be related to our dependent variables on allocation and performance. Table 7 reports the percent of the population that was living in rural and urban areas of each municipality for years 1994-1997 by population decile. In Colombia, a municipality often consisted of a number of different towns, each with its own level of urbanization. For this reason, a municipality may have had both urbanized and rural areas. Over the four years, the percent living in urban areas increased slightly.

[4] TGE was assumed to be the same as total municipal income as we assumed total municipal revenue equaled the municipalities' expenditure.

Table 7. Percent Living in Urban Areas by Population Decile

DECILES	1994	1995	1996	1997
1 (smallest)	34.6	33.9	32.8	33.7
2	35.7	35.0	34.2	33.6
3	36.9	35.5	35.8	34.8
4	35.2	36.5	37.2	35.6
5	38.8	39.5	39.3	40.4
6	38.1	38.1	39.5	40.4
7	39.7	41.0	39.8	40.7
8	41.8	45.0	45.7	46.7
9	49.6	51.1	50.5	50.7
10 (largest)	74.1	74.3	74.7	75.6
Average	42.6	43.1	43.1	43.4

Source: National Statistics Office

For those municipalities with income information, we calculated in Table 8 the percent of persons living in urban areas based on income deciles. Similarly to population deciles, there was a steady increase in the percent living in urban areas from the poorest to richest municipalities. Over all four years, there was not a very large change in the average percent living urban areas.

Table 8. Percent Living in Urban Areas by Income Decile

DECILES	1994	1995	1996	1997
1	37.1	33.3	34.7	35.8
2	34.0	38.6	35.1	35.6
3	36.2	38.2	38.2	33.9
4	34.5	34.0	41.0	38.7
5	37.4	36.5	32.9	38.4
6	38.7	39.4	37.7	37.6
7	40.7	40.6	43.6	44.0
8	46.7	45.9	47.6	46.3
9	51.8	52.9	51.5	49.8
10	73.6	73.9	75.7	78.2
Average	43.1	43.3	43.8	43.8

Note: Municipalities that did not report income data were not reported.
Source: National Statistics Office

PERCENT OF MUNICIPAL POPULATION WITH "UNMET BASIC NEEDS"

The Department of National Planning in Colombia developed a standardized poverty measure to be used by government planners to evaluate and target programs. The measure was called the "Index of Unmet Basic Needs" (INBI) and represented the percent of the population in each municipality that had at least one of the following characteristics: inadequate housing, housing lacking the basic services such as water, electricity and/or a sewer system, overcrowded living conditions (a room with more than three people), high economic dependence (homes with more than three people for each working person and with a head of household having less than three years of schooling), and/or low levels of schooling for the children in the household (at least one child between 7 and 11 years old that was not attending school) (Yepes 1998). This INBI was used to classify the level of municipal poverty for targeting of social programs in Colombia. Table 9 shows the percent of municipalities that qualified with

at least one of the above unmet basic necessities according to population decile. Only percentages for 1997 were reported, since there was little variation for other years.

Table 9. Percent with Unmet Basic Necessities by Population and Income Decile

POPULATION DECILES	1997	INCOME DECILES	1997
1 (smallest)	53.0	1 (poorest)	55.6
2	48.4	2	54.5
3	51.6	3	54.4
4	55.0	4	54.4
5	55.0	5	53.5
6	52.7	6	52.8
7	53.7	7	48.8
8	56.6	8	46.0
9	50.5	9	46.3
10 (largest)	39.5	10 (wealthiest)	35.1
Average	51.5	Average	50.1

Note: Municipalities that did not report income data were not reported.
Source: DNP

According to both population deciles and income deciles, the largest municipalities were associated with less poverty. The largest and wealthiest municipalities were the only municipalities that had less than 40% of the population with unmet basic needs. While the smallest municipalities had high levels of unmet basic needs (53.0%), it was the third to largest municipalities, those in decile eight, that had the highest percent of unmet basic necessities (56.6%). The poorest municipalities had the highest percent of unmet basic needs (55.6%). Due to the fact that the percent of unmet basic necessities did not vary considerably over the four years, this variable was only described here and was not included in any further analysis.

MUNICIPALITY CLASSIFICATION

A second measure of poverty we used was called "categoría del municipio" or municipality classification. This indicator was based upon the total population of the municipality, the amount of funding they received from the government, and the minimum wage. The scale ranged from one to six, one being the highest quality of life and six being the lowest quality of life (Yepes 1998). Table 10 shows the six categories for the years 1996 and 1997. Numbers were not available for 1994 or 1995.

Table 10. Number of Municipalities in Six Levels of Quality of Life Indicator

RICH TO POOR CLASSIFICATION	1996	1997
1 = Richest Municipalities	14 (1.3%)	19 (1.8%)
2	31 (3.0%)	35 (3.4%)
3	58 (5.6%)	49 (4.7%)
4	119 (11.4%)	135 (13.0%)
5	271 (26.0%)	362 (34.7%)
6 = Poorest Municipalities	548 (52.6%)	442 (42.2%)
Total Municipalities	1041 (100.0%)	1042 (100.0%)

Source: DNP

Fourteen municipalities in 1996 and 19 municipalities in 1997 were scored as "rich". More than half the municipalities in 1996 (52.6%) and a little less than half in 1997 (42.2%) were classified as poor. Of the 442 poorest municipalities in 1997, 90 (20.4%) of them were in the smallest population decile. Among the 106 municipalities in decile 8 in 1997 that happened to have the highest percent of unmet basic necessities, seen above in table 9, seven classified as poverty level six, 76 as poverty level 5, and 22 as poverty level four. Decile 8, municipalities with populations between 23,168 and 30,388, had fairly high levels of "poverty", although not extreme, and had many unmet basic necessities.

As this variable was only available for two out of the four years of our study, it was not used in any further analysis.

TOTAL INCOME PER CAPITA

Tables 11 and 12 show the total municipal income (x 1000 pesos) per capita by population and income deciles. Both tables were adjusted according to the consumer price index for 1997. Interestingly, the smallest municipalities had higher municipal incomes than the larger municipalities for all years. This gap increased over the years.

Table 11. Average Total Municipal Income (x 1000 pesos) per Capita in Population Deciles, 1994-1997

DECILES	1994	1995	1996	1997
1	73.8	89.6	142.9	184.4
2	60.9	74.9	106.7	135.4
3	54.8	81.7	123.3	150.4
4	60.3	66.4	100.2	129.3
5	60.2	69.0	99.8	117.7
6	56.0	68.1	91.4	113.9
7	58.6	72.0	86.9	101.3
8	50.5	57.6	82.6	96.8
9	55.5	63.9	81.1	98.9
10	63.6	72.3	97.9	97.7
Average	59.1	71.3	100.4	121.3
$10^{th}/1^{st}$	0.86	0.81	0.68	0.53

Source: DNP: Territorial Development Department

Table 12, adjusted according to the consumer price index for 1997, shows that the wealthiest municipalities had more municipal income per inhabitant than those in the poorest municipalities. The gap between the wealthiest municipalities and the poorest municipalities lessened over the years, from 3.13 in 1994 to 1.92 in 1997.

Table 12. Average Total Municipal Income (x 1000 pesos) per Capita in Population Deciles, 1994-1997

DECILES	1994	1995	1996	1997
1	29.8	40.7	71.9	76.8
2	39.1	47.6	84.7	91.6
3	38.3	49.6	80.8	102.6
4	45.7	55.3	77.3	105.1
5	49.7	60.3	85.2	128.7
6	63.6	66.3	100.8	127.6
7	69.8	76.3	115.1	144.1
8	65.9	87.4	115.8	146.3
9	96.0	102.6	127.4	142.8
10	93.3	125.4	144.4	147.1
Average	59.1	71.1	100.4	121.3
$10^{th}/1^{st}$	3.13	3.08	2.08	1.92

Note: Municipalities that did not report spending figures
Source: DNP: Territorial Development Department

This variable was used in calculating the dependent variables "total health expenditure/total general expenditure" (THE/TGE) and "total own-source health expenditure/total own-source general expenditure" (TOHE/TOGE). Both of these variables were used in the regression analysis.

HUMAN RESOURCES

Another characteristic of municipalities that we explored was the number of human resources (in medical hours) available to provide primary health care services in each municipality. Tables 13 and 14 show the hours contracted for the different types of human resources in all levels of health care facilities. The different categories included administrative contract workers, administrative civil workers, clinical contract workers, and clinical civil workers. Administrative personnel included any and all staff working within the administrative area of the hospital, from the hospital director to the building janitor. Clinical workers included any person involved in the delivery of actual provision of health care services. The clinical category ranged from medical specialists to auxiliary nurses. Local management and local authorities usually had more flexibility in hiring, firing and determining salaries for contract personnel, with less union protection than civil service employees. It would be almost impossible to fire a civil worker. Hiring more contract workers meant more flexibility, less outside influence, and more defined work terms.

Table 13 shows that in 1994, the difference in contract hours between the next to wealthiest municipality and the next to poorest municipality (90 and 20 income percentiles) varied most among civil workers, both administrative and clinical, with a ratio of 8.14 and 9.0 respectively. This ratio between income deciles showed that richer municipalities were able to hire more workers on a permanent civil service basis rather than under contract.

Table 13. Health Sector Human Resources (1994)

HOURS CONTRACTED	ADMINISTRATIVE CONTRACT	ADMINISTRATIVE CIVIL	CLINICAL CONTRACT	CLINICAL CIVIL
Average	6.9	63.9	7.9	82.4
Standard Dev.	10.3	230.7	13.5	237.6
90/20	3.2	8.14	2.7	9.0
50/20	1.05	4.08	1.2	2.6
# Observations	225	538	193	536

Source: MOH

As a comparison, the human resource inputs for 1997 were shown in Table 14. In 1997, the difference in human resource hours between the wealthier and poorer municipalities was not as large as in 1994. This meant that the number of civil service workers hired in the poorer municipalities leveled off between the years 1994 and 1997. These results also indicated more reporting of contract hours among the poorer municipalities in 1997, which may have decreased the gap with the wealthier municipalities.

Table 14. Human Resource Inputs (1997)

HOURS CONTRACTED	ADMINISTRATIVE ON CONTRACT	ADMINISTRATIVE ON CIVIL SERVICE	CLINICAL CONTRACT	CLINICAL CIVIL SERVICE
Average	16.1	66.7	14.0	94.9
Standard Dev.	59.0	217.4	45.5	267.2
90/20	5.3	5.4	2.5	5.1
50/20	1.6	1.6	0.8	1.2
# Observations	414	563	395	564

Source: MOH

Despite the low numbers reported for human resources, we did run two regressions using this data. We regressed the total administrative personnel in proportion to total personnel and total contract personnel in proportion to total personnel.

MUNICIPALITY AND DEPARTMENT CERTIFICATION

We hypothesized that municipality and/or department certification were two extremely important factors in determining the decision making power of a municipality. Table 15 shows that out of the 1080 municipalities in our data base, the number of municipalities that became certified over the four-year period increased from 1.8% to 29.6%. The number of municipalities under the jurisdiction of certified departments increased also, from 30.7% to 50.2%. By 1997, more than half of all municipalities were under the jurisdiction of certified departments.

Table 15. Municipality and Department Certification

	1994	1995	1996	1997
Municipalities				
# Certified (%)	19 (1.8)	27 (2.5)	122 (11.3)	320 (29.6)
Avg. Length of Certification (possible maximum time period)	10.0 (12)	16.1 (24)	8.5 (36)	10.0 (48)
Departments				
# Municipalities whose Dept's are certified (%)	331 (30.7%)	337 (31.2%)	542 (50.2%)	542 (50.2%)
Avg. length of certification (possible max)	4.9 (0-12)	16.8 (0-24)	21.2(0-36)	22.1 (0-48)

Source: MOH

Length of certification was calculated from January 1, 1994. The longest possible length of time for any municipality or department to be certified by December 31, 1994 was 12 months, by December 31, 1995 was 24 months, by December 31, 1996 was 36 months and by December 31, 1997 was 48 months. In 1994, municipalities were certified rapidly. The average length of certification for this year was 10 months, almost reaching the maximum of 12 months. The average length of certification decreased steadily from the maximum for years 1995-1997, as more, newly certified were calculated into the equation.

The opposite pattern was seen for department certification. Over the years 1994-1997 the average length of certification steadily increased. Departments became certified faster than municipalities. By 1996 and 1997 almost all department were certified, increasing the length of certification for these years.

Tables 16 and 17 show the number of certified and non-certified municipalities for the years 1994-1997 by population and income deciles. In 1994, 14 out of the 19 municipalities that were certified, were in the largest population decile. Only eight municipalities became certified in 1995. In 1996 and 1997, there was a large surge in certification among the middle-sized municipalities. In 1997, decile 6 had 30 new certified municipalities while decile 9 had 32. In terms of income deciles, table 17, the largest increases in certification were seen in years 1996 and 1997. In 1997, the richest municipalities, those in deciles 7, 8 and 9, became certified at the fastest rate.

Table 16. Number of certified, non-certified, and newly certified Municipalities by Population Decile

DECILES	1994		1995		1996		1997	
	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW
1	0 (105)	0	0 (105)	0	3 (102)	3	9 (95)	6
2	0 (106)	0	0 (106)	0	5 (101)	5	18 (89)	13
3	1 (105)	1	1 (105)	0	15 (91)	14	30 (76)	15
4	0 (106)	0	0 (106)	0	15 (91)	15	35 (71)	20
5	1 (105)	1	2 (104)	1	13 (93)	11	31 (75)	18
6	0 (105)	0	1 (104)	1	10 (95)	9	40 (65)	30
7	1 (105)	1	3 (103)	2	14 (92)	11	31 (75)	17
8	1 (105)	1	2 (104)	1	11 (95)	9	36 (70)	25
9	1 (105)	1	3 (103)	2	9 (97)	6	41 (65)	32
10	14 (92)	14	15 (91)	1	27 (79)	12	48 (58)	21
Total	19 (1039)	19	27 (1031)	8	122 (936)	95	320 (738)	198

Note: Based on N = 1058 municipalities that reported population data.
Source: MOH

Table 17. Number of certified, non-certified, and newly certified Municipalities by Income Decile

DECILES	1994		1995		1996		1997	
	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW
1	0 (96)	0	0 (95)	0	8 (89)	8	18 (75)	10
2	0 (97)	0	0 (96)	0	4 (94)	4	16 (77)	12
3	1 (95)	1	1 (96)	0	10 (88)	9	20 (74)	10
4	0 (96)	0	1 (94)	1	9 (89)	8	30 (63)	21
5	0 (96)	0	0 (96)	0	16 (81)	16	29 (65)	13
6	1 (95)	1	4 (92)	3	12 (86)	8	33 (61)	21
7	1 (95)	1	2 (94)	1	9 (88)	7	34 (58)	25
8	1 (96)	1	2 (94)	1	11 (87)	9	37 (57)	26
9	0 (95)	1	2 (94)	2	9 (89)	7	36 (57)	27
10	15 (82)	15	15 (81)	0	27 (71)	12	46 (48)	19
Total	19 (943)	19	27 (932)	8	115 (862)	88	299 (635)	184

Note: Municipalities that did not report income figures were not reported.
Source: MOH

Tables 18 and 19 show the pattern of department certification at the municipality level (the number of municipalities under the jurisdiction of certified and non-certified departments). The municipalities included in each population decile changed slightly from year to year. For this reason, there was a drop in number of municipalities under the jurisdiction of certified departments for certain deciles (i.e., decile 7 in 1995). Overall, 1994 and 1996 were important years in department certification. In these two years, there were large increases in the number of municipalities under the jurisdiction of certified department.

Table 18. Number of municipalities with certified, non-certified, and newly certified Department by Population Decile

DECILES	1994		1995		1996		1997	
	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW
1	12 (93)	12	13 (92)	1	37 (68)	24	37 (67)	0
2	13 (93)	13	14 (92)	1	35 (71)	21	35 (72)	0
3	25 (81)	25	26 (80)	1	45 (61)	19	44 (62)	-1
4	38 (68)	38	39 (67)	1	57 (49)	18	57 (49)	0
5	34 (72)	34	35 (71)	1	49 (57)	14	49 (57)	0
6	38 (67)	38	39 (66)	1	56 (49)	17	58(47)	2
7	38 (68)	38	37 (69)	-1	63 (43)	26	61 (45)	-2
8	37 (69)	37	37 (69)	0	59 (47)	22	61 (45)	2
9	46 (60)	46	47 (59)	1	69 (37)	22	68 (38)	-1
10	49 (57)	49	49 (57)	0	71 (35)	22	71 (35)	0
Total	330 (728)	330	336 (722)	6	541 (517)	205	541 (517)	0

Source: MOH

Table 19. Number of certified, non-certified, and newly certified Municipalities by Income Decile

DECILES	1994		1995		1996		1997	
	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW	CERT (NOT)	# NEW
1	14 (82)	14	12 (83)	-2	41 (56)	29	36 (57)	-5
2	15 (82)	15	15 (81)	0	26 (72)	11	26 (67)	0
3	32 (64)	32	30 (67)	-2	39 (59)	9	44 (50)	5
4	38 (58)	38	33 (62)	-5	47 (51)	14	45 (48)	-2
5	40 (56)	40	39 (57)	-1	53 (44)	14	55 (39)	2
6	41 (55)	41	37 (59)	-4	71 (27)	34	63 (31)	-8
7	36 (60)	36	45 (51)	9	63 (34)	18	60 (32)	-3
8	34 (63)	34	33 (63)	-1	69 (29)	36	56 (38)	-13
9	38 (57)	38	38 (58)	0	56 (42)	18	59 (34)	3
10	38 (59)	38	40 (56)	2	65 (33)	25	64 (30)	-1
Total	326 (636)	326	322 (637)	-4	530 (447)	208	508 (426)	-22

Note: Municipalities that did not report income figures are not reported.
Source: MOH

Certification and length of certification were two of the most important variables for our hypotheses of decentralization and decision making power among municipalities and for that reason were used in the regression below. Municipality and department certification were dichotomized into a binary variables defined as certified or not certified. Length of certification remained a continuous variable defined in months.

FOSYGA

The number of managed care organizations was growing in Colombia. Those who contributed a percentage of their salary to the universal social insurance system, those in the contributory regime, selected from a number of private managed care organization, known as EPSs, *Entidades Promotoras de Salud*. The surplus incurred by the EPSs from risk-adjusted capitation rates of their contributory beneficiaries, was transferred to the government fund, called FOSYGA. FOSYGA funding was used to help EPSs finance services for any persons from the subsidized regime that they were willing to cover. Municipalities were encouraged to enroll a certain number of their subsidized regime in the EPSs. Those in the subsidized regime not covered by EPSs were served by public autonomous managed care organizations, ESSs, *Empresas Solidarias de Salud*. Table 20 shows the average FOSYGA per population decile. Monetary figures for FOSYGA appeared in the budget for the first time in 1997.

Table 20. Average FOSYGA (x 1000 pesos) per Population Deciles, 1996 and 1997

DECILES	1997
	FUNDING
1	114,652
2	166,029
3	222,645
4	232,208
5	240,138
6	234,907
7	281,451
8	381,009
9	430,436
10	902812
Average	314,576
$10^{th}/1^{st}$	7.87

Note: Data on FOSYGA funding for 1996 was not available.
Source: DNP: Territorial Development Department

Table 21. Average FOSYGA (x 1000 pesos) per Income Deciles, 1996 and 1997

DECILES	1997
	FUNDING
1	159526
2	166030
3	222645
4	232208
5	240138
6	234907
7	281451
8	381002
9	430436
10	902812
Average	325116
$10^{th}/1^{st}$	5.66

Note: Data on FOSYGA funding for 1996 was not available.
Source: DNP: Territorial Development Department

Table 22 and 23 show the number of persons affiliated with the subsidized regime. The number of persons who qualify under the subsidized regime were selected using a system called SISBEN (Beneficiary Identification System). Under SISBEN, subsidiaries were selected according to how they answer a special form given to those houses that classify as poverty levels I, II, or III.

Table 22. Average number in subsidized regime affiliated with EPSs per Population Deciles, 96-97

DECILES	1996	1997
1	1849	1899
2	2469	2474
3	3054	3170
4	3105	3363
5	3467	3710
6	3621	3980
7	4246	4846
8	5214	6132
9	6290	7280
10	21265	29523
Average	5514	6731
$10^{th}/1^{st}$	11.5	15.5

Note: SISBEN data only available in 1996 and 1997.
Source: DNP: Territorial Development Department

Table 23. Average number in subsidized regime affiliated with EPSs per Income Deciles, 96-97

DECILES	1996	1997
1	2199	2667
2	2580	2863
3	3311	3217
4	3382	3807
5	3650	3792
6	3504	4131
7	4388	4717
8	4811	5915
9	7170	8047
10	21654	31225
Average	5665	7038
$10^{th}/1^{st}$	9.85	11.7

Note: SISBEN data only available in 1996 and 1997.
Source: DNP: Territorial Development Department

EXTERNAL AND OWN-SOURCE REVENUES

External and own-source revenues generated by each municipality were used to investigate their relationship to health care expenditures, municipality certification, and other aspects of decentralization such as utilization of health care services, promotion and prevention allocations, "fiscal laziness", and efficiency. Both external and own-source revenues were used as independent variables in the regression models below.

A municipalities external revenues included the two main central sources of funding, *Situado Fiscal* and direct departmental grants, plus any "municipal participation" funds directed to health and/or health care facilities in the municipality.[5] The "municipal participation" funds

[5] To avoid double counting municipal transfers earmarked as salaries for medical human resources are subtracted from the equation, since these funds would already be counted in the *Situado Fiscal* (which goes directly to the facilities themselves).

we included in the equation for external resources were the 25% "forced" or earmarked for health, the "free" or non-earmarked funds that were also used by the municipality for health, and any other "municipal participation" funds granted to the municipality from the central government or the department. Certified municipalities received half of the 20+% of the *Situado Fiscal* allocated to their department. "Municipal participation" was granted to all municipalities regardless of certification status and was to be used exclusively for "social investment". The amount of "municipal participation" transferred had increased gradually from 15% in 1994 to 22% in 2004. The formula for distribution was based on a sliding scale for each municipality depending on the INBI, poverty level, municipal population, fiscal effort, administrative efficiency, and quality of life indicators. A new central fund called FOSYGA was included as a portion of external resources in 1997, the first year it appeared in the budget. FOSYGA was the surplus collected by EPSs from the risk-adjusted capitation rate for each beneficiary enrolled in the contributory regime. The FOSYGA was granted to municipalities based on the number of "affiliados" or residents they had enrolled in the subsidized national health insurance program.

Own-source revenue included funds generated by the municipality itself such as property taxation, a special tax on gross income of industry and commerce, motor vehicle fees, donations, and certain "sin" taxes. *Aportes Municipales*, defined as those municipal funds generated by the municipality itself, were also included. Any municipal resources and/or municipal credit generated for health, classified under "municipal participation", were included in the calculation of own-source revenues. Fee-for-services were managed at the hospital level and were not included.

Table 24 shows the distribution of external and own-source revenues per population decile, adjusted according to the 1997 consumer price index. Only the largest two population deciles reached external revenues above the national average for years 1994-1997. Only the largest municipalities came close to the national own-resource averages for these same years.

Table 24. Average External and Own Source Revenues per Population Decile in Pesos (x 1000)

Deciles	1994		1995		1996		1997	
	External	Own	External	Own	External	Own	External	Own
1	44807397	2395255	71100843	3135837	108290435	8341400	237124500	15798930
2	80318603	5757433	120087500	8712169	143062824	17270965	318283700	31014720
3	120548724	16519347	183654143	28205443	245211529	60293482	511369800	104569200
4	196773966	27589466	251194143	46356314	342870353	90190035	598310800	139721600
5	243240862	38822448	334697000	53027786	422701647	107954047	674645900	158471000
6	327767931	56400328	418873714	90003657	499402235	151672824	752347600	229418900
7	431077241	60748224	591030000	108345586	710462118	202392941	1001642000	279300300
8	507573448	94229707	637113429	141660457	822594000	268614353	1233517000	406427800
9	773075690	156007397	1023242429	275895143	1174638471	452194824	1719763000	543664900
10	448874655	1661892414	593083714	492493571	7344732941	6071297647	8699679000	6885302000
Avg	707740690	208055690	938079143	557428286	1159008353	729114471	1544856000	862899800

Source: DNP

Table 25 shows the ratio of external to own-source revenues per population decile. In general the smallest municipalities relied most heavily on external revenues, reaching a maximum external to own-source ratio of 113.08 in 1997. The largest municipalities, decile 9 in 1996 and decile 10 in 1997, generated the most own revenue in comparison to external

revenue. However, certain middle-sized municipalities also generated a significant amount of their own revenue. In 1995, decile 4 had a ratios of 6.23. In 1996, decile 4 again had a low ratio of 6.98. In 1997, decile 5 had the second lowest ratio of 5.39.

Table 25. Ratio of Average External to Own Source Revenues by Population Decile

DECILES	1994	1995	1996	1997
	EXTERNAL/OWN	EXTERNAL/OWN	EXTERNAL/OWN	EXTERNAL/OWN
1	27.48	15.69	7.79	113.08
2	51.88	15.66	20.73	17.43
3	12.23	9.04	10.09	17.62
4	20.81	6.23	6.98	15.66
5	23.01	9.05	21.74	5.39
6	10.02	7.68	10.45	12.62
7	8.82	9.06	7.96	6.42
8	13.83	10.66	10.95	6.30
9	10.34	10.35	4.90	6.46
10	9.94	7.50	7.51	4.67

Note: Only those municipalities reporting financial data were included in analysis
Source: DNP

In terms of income deciles, in 1994 there was a clear pattern of increasing own resources among the richer municipalities. In 1995-1997, richer municipalities generated more of their own resources, but it was not the poorest municipalities, rather decile 4 in 1996 and 1997, that had the highest ratios of external to own-sources revenues.

Table 26. Ratio of Average External to Own-Source Revenues by Income Decile

DECILES	1994	1995	1996	1997
	EXTERNAL/OWN	EXTERNAL/OWN	EXTERNAL/OWN	EXTERNAL/OWN
1	67.76	8.65	17.58	28.39
2	23.89	13.89	19.21	21.67
3	26.44	12.55	19.09	48.42
4	24.81	8.57	30.28	22.09
5	11.11	7.46	11.93	7.60
6	16.86	10.98	7.81	6.52
7	13.08	6.57	4.64	7.61
8	11.21	9.19	7.01	4.22
9	10.33	11.84	8.87	11.29
10	10.61	7.33	3.95	3.91

Note: Only those municipalities reporting financial data are included in analysis
Source: DNP

Table 27 shows the amount of external and own source revenue per capita by population decile, adjusted according to the consumer price index for 1997. For all four years, own-source revenue per capita followed the same pattern: the smallest municipalities had the least amount of own-source revenue per inhabitant while the largest municipalities had the greatest. In 1994 and 1995, external revenue followed a similar pattern as own-source revenue, smallest municipalities had less external revenue per inhabitant than the larger municipalities. However, in 1996 there was almost no difference between the smallest and largest municipalities in terms of average external revenue per inhabitant. Even more extreme results

present themselves in 1997, when the external revenue per inhabitant of the smallest municipalities actually exceeds that of the largest municipalities. This table shows that over time external sources have become a means of providing equity for total municipal revenues, compensating for the lack of own source revenues in smaller communities.

Table 27. Average External and Own-Source Revenues per Capita by Population Decile

DECILES	1994		1995		1996		1997	
	EXTERNAL	OWN	EXTERNAL	OWN	EXTERNAL	OWN	EXTERNAL	OWN
1	14.5	0.7	23.9	0.9	37.6	2.2	84.7	4.5
2	15.2	1.1	23.7	1.7	27.4	3.3	60.3	5.9
3	16.2	2.2	25.0	3.9	33.5	8.2	68.8	13.8
4	20.5	2.9	26.4	4.9	36.0	9.4	62.2	14.4
5	20.2	3.3	27.9	4.4	34.7	8.9	54.9	12.8
6	21.6	3.6	27.4	5.7	32.4	9.8	48.2	14.6
7	22.1	3.1	29.9	5.4	35.5	10.0	49.4	13.6
8	20.0	3.8	24.9	5.6	31.6	10.4	46.8	15.4
9	20.7	4.1	27.1	7.4	30.7	11.9	44.7	14.2
10	28.3	6.2	33.9	10.0	38.2	16.2	45.5	17.4
Avg.	19.8	3.1	26.9	5.0	33.8	9.1	56.5	12.7

Table 28 shows external and own-source revenues by income decile, adjusted according to the consumer price index for 1997.

Table 28. Average External and Own-Source Revenues per Capita by Income Decile

DECILES	1994		1995		1996		1997	
	EXTERNAL	OWN	EXTERNAL	OWN	EXTERNAL	OWN	EXTERNAL	OWN
1	7.1	0.2	10.9	0.2	22.4	0.9	54.6	2.1
2	10.7	0.5	12.0	0.8	22.8	1.2	56.2	2.9
3	10.5	1.2	15.3	1.4	25.4	3.2	59.1	7.1
4	14.8	2.2	19.4	2.4	26.6	4.7	54.4	9.6
5	16.9	2.6	24.3	4.3	28.8	7.6	62.4	13.9
6	28.1	4.1	27.1	6.0	38.0	12.8	60.0	18.1
7	24.5	4.1	36.0	7.9	47.2	14.7	67.3	20.3
8	25.7	4.1	41.6	8.0	45.8	13.4	67.3	21.2
9	37.8	6.7	52.4	10.0	56.0	18.1	64.7	23.4
10	43.4	8.3	58.7	14.0	52.7	21.2	64.6	25.0
Avg.	21.9	3.4	29.7	5.4	36.6	9.8	61.1	14.4
10^{th}/1st	6.11	41.5	5.38	70.0	2.35	23.55	1.18	11.9

TOTAL HEALTH EXPENDITURE/TOTAL GENERAL EXPENDITURE (THE/TGE)

Total health expenditure as a portion of total general expenditure (TGE) was calculated for each municipality as a measure of municipality allocations to health in proportion to total general expenditure.[6] Table 29 shows the ratio of THE to TGE by municipality population deciles. For all four years, the largest municipalities allocated the most to health care in terms

[6] Total health expenditure included the total revenue of all health care facilities at all levels of complexity plus any investment in health a municipality may have made on its own, corrected for any double counting.

of general expenditures, reaching a ratio of almost 0.70 in 1997. The smallest municipalities allocated the least to health care relative to other sectors.

Table 29. Ratio of Total Health Expenditure to Total General Expenditure by Population Decile

DECILES	1994	1995	1996	1997
	THE/TGE	THE/TGE	THE/TGE	THE/TGE
1	0.33	0.31	0.34	0.36
2	0.28	0.27	0.32	0.32
3	0.34	0.35	0.40	0.42
4	0.44	0.43	0.46	0.50
5	0.46	0.45	0.48	0.52
6	0.49	0.48	0.50	0.54
7	0.47	0.52	0.52	0.62
8	0.50	0.52	0.54	0.62
9	0.50	0.55	0.56	0.58
10	0.62	0.66	0.60	0.69
$10^{th}/1^{st}$	1.88	2.13	1.76	1.92

Source: MOH

In terms of income deciles, seen below in table 30, the richest municipalities allocated the most to health care in terms of general expenditure. However, the range between richest and poorest municipalities diminished over the years. In 1994, the richest municipalities had a ratio 2.37 times that of the poorest municipalities. In 1997, the ratio between the rich and the poor was 1.25 times.

Table 30. Ratio of Total Health Expenditure to Total General Expenditure by Income Decile

DECILES	1994	1995	1996	1997
	THE/TGE	THE/TGE	THE/TGE	THE/TGE
1	0.27	0.25	0.35	0.51
2	0.29	0.24	0.32	0.40
3	0.38	0.34	0.38	0.45
4	0.39	0.37	0.37	0.46
5	0.44	0.47	0.46	0.50
6	0.56	0.48	0.52	0.55
7	0.49	0.56	0.55	0.55
8	0.47	0.60	0.56	0.57
9	0.56	0.62	0.60	0.58
10	0.64	0.67	0.61	0.64
$10^{th}/1^{st}$	2.37	2.68	1.74	1.25

Source: MOH

This THE/TGE ratio was one of the seven dependent variables in the regression analysis below.

TOTAL HEALTH EXPENDITURE PER CAPITA

Table 31 shows the total health expenditure (THE/capita) per capita by population deciles, adjusted according to the consumer price index for 1997. Years 1994-1996 showed a steady increase in health expenditure per capita from the smallest to largest municipalities. However,

in 1997, the smallest municipalities had higher health expenditures per capita than the largest municipalities. In this same year, the municipalities in decile 3 had the highest level of health expenditures per capita over all four years, 57.96 pesos (x 1000) per person. The gap between the largest and smallest municipalities in terms of THE per capita dropped significantly over the four years from 2.35 to 0.79.

Table 31. Total Health Care Spending per Capita by Population Decile

DECILES	1994	1995	1996	1997
1	16.71	25.17	41.26	50.45
2	18.22	25.11	32.16	37.65
3	20.86	29.14	44.91	57.96
4	26.55	31.53	47.06	56.14
5	25.93	32.33	46.11	51.98
6	27.91	34.76	44.76	52.43
7	27.62	40.84	48.59	53.98
8	26.29	30.66	44.04	51.80
9	27.21	36.10	44.86	51.71
10	39.22	46.24	58.04	40.01
Average	25.66	33.19	45.19	52.57
$10^{th}/1^{st}$	2.35	1.84	1.41	0.79

Source: MOH

In terms of income deciles, for each year there was a steady increase in total health expenditure per capita from the poorest municipalities to the richest municipalities. The gap between the rich and the poor decreased from 1994 to 1997, from 8.36 to 3.37.

Table 32. Total Health Care Spending per Capita by Income Decile

DECILES	1994	1995	1996	1997
1	7.14	9.60	21.72	26.68
2	11.74	11.09	24.68	28.97
3	13.12	16.41	29.80	42.10
4	19.24	22.20	31.16	43.43
5	22.16	29.04	39.05	59.40
6	34.57	33.87	53.41	67.48
7	32.67	45.13	64.81	77.77
8	31.97	52.36	64.34	77.08
9	50.03	64.76	80.34	82.76
10	59.67	81.90	79.96	89.94
Average	28.21	36.63	48.93	59.56
$10^{th}/1^{st}$	8.36	8.53	3.68	3.37

Source: MOH

TOTAL OWN-SOURCE HEALTH EXPENDITURES (TOHE)

We examined how the municipality allocated its own source revenue to health. Own-source revenue included funds generated by the municipality itself such as property taxation, a special tax on gross income of industry and commerce, motor vehicle fees, donations, and certain "sin" taxes dedicated solely to health. *Aportes Municipales*, defined as those municipal funds

generated by the municipality itself, were also included. Fee-for-services were managed at the hospital level and were not included. As can be seen in table 33, data was not available in 1994 on the amount of own revenues generated for health, education, water and sanitation, and sports and culture creating a ratio of one for own source health expenditure to own source general. During the years 1995-1997, this proportion declined--more so in smaller municipalities than in larger municipalities, who in general still assigned most of their funds to health. The smaller communities seemed to make allocation decisions about their own funds that were less favorable to health.

This variable was used below as one of the seven dependent regression variables.

Table 33. Ratio of TOHE to TOGE per Population Decile

DECILES	1994	1995	1996	1997
	TOHE/TOGE	TOHE/TOGE	TOHE/TOGE	TOHE/TOGE
1	-----	0.57	0.53	0.61
2	-----	0.51	0.66	0.76
3	-----	0.81	0.74	0.79
4	-----	0.84	0.85	0.87
5	-----	0.88	0.81	0.89
6	-----	0.90	0.87	0.91
7	-----	0.90	0.89	0.90
8	-----	0.88	0.86	0.93
9	-----	0.88	0.87	0.92
10	-----	0.88	0.84	0.89
$10^{th}/1^{st}$	-----	1.54	1.58	1.46

Source: MOH

A similar pattern was seen with income deciles. The richest municipalities allocated more of the TOGE to health than the poorer municipalities.

Table 34. Ratio of TOHE to TOGE Income Decile

DECILES	1994	1995	1996	1997
	TOHE/TOGE	TOHE/TOGE	TOHE/TOGE	TOHE/TOGE
1	-----	0.48	0.54	0.85
2	-----	0.52	0.58	0.71
3	-----	0.63	0.73	0.81
4	-----	0.74	0.73	0.77
5	-----	0.90	0.78	0.87
6	-----	0.85	0.85	0.90
7	-----	0.93	0.91	0.94
8	-----	0.91	0.90	0.91
9	-----	0.91	0.91	0.92
10	-----	0.86	0.82	0.88
$10^{th}/1^{st}$	-----	1.79	1.52	1.03

Source: MOH

Tables 35 and 36 show the amount of TOHE per capita per population decile and income decile adjusted according to the consumer price index for 1997.

Table 35. TOHE per Capita per Population Decile

DECILES	1994	1995	1996	1997
	TOHE/CAP	TOHE/CAP	TOHE/CAP	TOHE/CAP
1	4.16	8.50	17.79	21.27
2	4.95	7.34	13.31	17.51
3	6.69	9.63	18.22	27.8
4	5.97	10.41	18.21	21.38
5	6.33	9.16	15.34	21.79
6	6.41	9.79	14.80	21.42
7	5.72	8.43	13.61	17.85
8	5.64	8.17	12.94	17.92
9	5.26	8.86	14.12	16.42
10	6.90	10.09	16.33	17.22
$10^{th}/1^{st}$	1.65	1.18	0.91	0.81

Source: MOH

Table 36. TOHE per Capita Income Decile

DECILES	1994	1995	1996	1997
	TOHE/CAP	TOHE/CAP	TOHE/CAP	TOHE/CAP
1	1.50	2.77	4.86	6.26
2	3.41	6.16	5.16	9.71
3	3.83	4.30	9.62	14.13
4	4.76	6.13	10.73	14.66
5	4.59	7.29	12.07	18.81
6	5.45	8.59	15.58	20.51
7	5.64	8.99	16.72	21.25
8	5.24	8.67	14.04	22
9	7.76	10.61	17.91	23.33
10	8.67	13.80	20.95	23.95
$10^{TH}/1^{ST}$	5.78	5.00	4.31	3.82

Source: MOH

UTILIZATION OF HEALTH CARE SERVICES

We hypothesized that utilization of health care services could be a useful measure of equity and increased efficiency in health care among municipalities. Although not a perfect proxy for measuring access, changes in utilization might reflect changes in access to health services. Utilization was measured by the amount of total general services rendered in all health care facilities in each municipality.[7] Table 37 summarizes the per capita utilization of services by population decile. The smallest municipalities had the largest per capita utilization rate, whereas the largest municipalities had the smallest utilization rate per capita. The smallest municipalities also had the least amount of municipalities reporting utilization information. Among the larger municipalities, reporting was more consistent. The reporting trend may have had an effect on utilization results. Overall, utilization rates increased from year to year, especially for the middle-sized municipalities.

[7] The concept "general services" includes both inpatient and outpatient visits since Colombian hospitals do not keep a record of the type of visit.

This variable was used as one of the dependent variables in the regression analysis to follow.

Table 37. Average Utilization of Health Care Services per Capita per Population Decile*

DECILES	1994		1995		1996		1997	
	UTILIZATION OF SERVICES	# OF MUN'S REPORTING	UTILIZATION OF SERVICES	# OF MUN'S REPORTING	UTILIZATION OF SERVICES	# OF MUN'S REPORTING	UTILIZATION OF SERVICES	# OF MUN'S REPORTING
1	1.03	17	1.04	17	1.3	10	1.6	10
2	0.78	24	0.80	21	0.94	22	1.2	25
3	0.83	42	0.87	45	0.98	43	1.2	44
4	0.78	56	0.77	58	0.97	54	1.1	55
5	0.69	59	0.74	58	0.98	59	1.0	61
6	0.64	65	0.71	65	0.86	67	0.94	67
7	0.56	69	0.82	72	0.74	71	0.80	73
8	0.47	89	0.52	88	0.65	75	0.70	79
9	0.49	91	0.49	91	0.56	86	0.60	85
10	0.32	102	0.33	102	0.35	99	0.34	100
Avg.	0.58	614	0.63	617	0.73	586	0.80	599

* Excludes all Municipalities where Services rendered were zero
Source: MOH

In terms of income deciles, richer municipalities did not offer more health care services per capita than poorer municipalities. For all years, the richest municipalities have similar or lower levels of utilization per capita than the poorest municipalities. In 1996, the poorest municipalities had rates of utilization per capita, 1.19, higher than any other deciles in any other years. In general, utilization rates formed an arc, increasing for deciles 4-7 then decreasing again for deciles 8-10.

Table 38. Average Utilization of Health Care Services per Capita per Income Decile*

DECILES	1994		1995		1996		1997	
	UTILIZATION OF SERVICES	# OF MUN'S REPORTING	UTILIZATION OF SERVICES	# OF MUN'S REPORTING	UTILIZATION OF SERVICES	# OF MUN'S REPORTING	UTILIZATION OF SERVICES	# OF MUN'S REPORTING
1	0.41	10	0.37	19	1.19	12	0.64	23
2	0.52	19	0.47	19	0.42	13	0.63	20
3	0.49	44	0.66	40	0.64	32	0.89	34
4	0.70	44	0.59	43	0.80	35	0.79	44
5	0.60	66	0.82	52	0.81	51	0.89	58
6	0.76	75	0.64	67	0.83	80	0.95	72
7	0.66	68	0.91	84	0.94	79	1.02	80
8	0.55	85	0.64	88	0.70	89	0.90	87
9	0.66	86	0.66	89	0.75	95	0.75	86
10	0.42	95	0.40	93	0.43	92	0.41	91
Average	0.58	614	0.63	617	0.73	586	0.80	599

* Excludes all Municipalities where Services rendered were zero
Source: MOH

EFFICIENCY

Efficiency is difficult to measure with the data available. We have attempted to analyze the total expenditures in relationship to the levels of utilization of services as we have in the Chile study. However, unlike in Chile where all municipal services are ambulatory primary care, the municipalities in Colombia also provide inpatient hospital care. This means that the indicators we have for utilization only are related to part of the expenditures. Therefore, the following analysis should be taken as possibly indicative of changes in trends. It does not account for a substantial portion of the utilization of costly services.

We used the total health expenditure in proportion to the level of utilization of health care services to measure "efficiency". The less spent per unit of services, the more "efficient" the municipality. In tables 37 and 38 we saw an increase in the amount of services provided over the years, adjusted according to the consumer price index for 1997. In tables 39 and 40 we saw an increase in the amount allocated to provide these services; more inefficient. Inefficiency rose from 55.00 pesos (x 1000)/unit of health care in 1994 to 166.89 pesos (x 1000) per unit of health care in 1997. In general, smaller municipalities were more efficient than larger municipalities, allocating less than their larger counterparts for the same number of services. In 1997, however, the smallest municipalities became more inefficient compared to other years.

Table 39. Efficiency of Utilization of Health Care per Population Decile*

DECILES	1994	1995	1996	1997
1	63.47	47.60	90.33	115.27
2	59.38	93.33	82.75	84.60
3	55.10	61.03	86.69	89.34
4	55.97	59.93	79.15	97.71
5	63.07	70.60	86.26	84.79
6	66.31	73.50	89.52	83.15
7	72.00	93.53	100.19	94.54
8	142.48	69.26	94.71	106.25
9	533.55	95.57	111.00	115.32
10	186.34	274.50	352.35	513.55
Average	163.50	108.41	137.19	166.89

* Excludes all Municipalities where Services rendered were zero and outliers
Source: MOH

In terms of income deciles (adjusted according to the consumer price index for 1997), richer municipalities were less efficient than poorer municipalities. The poorest municipalities had the highest efficiency rates of all municipalities. Over the four years, municipalities first became more efficient, decreasing the average spending (in pesos x 1000) per unit of health care service from 136.69 in 1994 to 88.33 in 1995. From 1995 to 1997, however, inefficiency rose again to 135.09.

Table 40. Efficiency of Utilization of Health Care per Income Decile*

DECILES	1994	1995	1996	1997
1	30.98	36.93	37.68	51.61
2	46.05	30.29	71.99	66.32
3	192.74	36.96	89.16	71.83
4	42.74	41.51	73.07	88.54
5	50.50	59.27	74.16	89.36
6	59.48	65.27	78.21	88.47
7	67.93	72.44	92.08	91.42
8	80.24	107.60	109.32	99.77
9	578.72	108.10	121.91	128.76
10	217.29	324.91	378.82	574.86
Average	136.69	88.33	112.65	135.09

* Excludes all Municipalities where Services rendered were zero and significant outliers
Source: MOH

PROMOTION AND PREVENTION

The ratio of how much was allocated in each municipality to promotion and prevention (PPE) as a portion of THE (not including environment and sanitation, education, or recreation) was reported in table 41. For all years, smaller municipalities spent more of their total heath expenditure on promotion and prevention than larger municipalities.

Table 41. Ratio of Promotion and Prevention Expenditure in proportion to THE per Population Decile

DECILES	1994	1995	1996	1997
	PPE/THE	PPE/THE	PPE/THE	PPE/THE
1	0.32	0.36	0.19	0.22
2	0.31	0.34	0.23	0.22
3	0.26	0.28	0.18	0.21
4	0.22	0.26	0.14	0.12
5	0.16	0.23	0.12	0.11
6	0.16	0.18	0.16	0.13
7	0.17	0.20	0.12	0.11
8	0.14	0.19	0.14	0.10
9	0.13	0.15	0.10	0.08
10	0.07	0.08	0.07	0.06

Source: MOH

In terms of income deciles, poorer municipalities allocated more to promotion and prevention in terms of total health expenditure than wealthier municipalities.

Table 42. Ratio of Promotion and Prevention Allocations in proportion to THE per Income Decile

DECILES	1994	1995	1996	1997
	PPE/THE	PPE/THE	PPE/THE	PPE/THE
1	0.44	0.40	0.23	0.26
2	0.33	0.42	0.23	0.21
3	0.33	0.35	0.20	0.18
4	0.25	0.31	0.19	0.17
5	0.16	0.23	0.18	0.12
6	0.09	0.20	0.12	0.11
7	0.11	0.13	0.09	0.09
8	0.13	0.19	0.08	0.09
9	0.07	0.08	0.07	0.09
10	0.06	0.05	0.07	0.07

Note: Only those municipalities that reported spending figures were reported.
Source: MOH

The ratio of PPE/THE was used as one of the dependent variables in the regression analysis.

Table 43 shows the amount allocated to Promotion and Prevention per Capita in terms of population deciles.

Table 43. Promotion and Prevention Expenditure per Capita per Population Decile

DECILES	1994	1995	1996	1997
	PPE PER CAPITA	PPE PER CAPITA	PPE PER CAPITA	PPE PER CAPITA
1	3.69	5.11	6.86	10.18
2	3.59	3.86	5.95	7.00
3	2.79	4.06	5.84	9.00
4	2.83	2.71	4.66	6.14
5	2.19	3.01	3.72	4.22
6	2.19	2.27	3.86	5.22
7	3.88	2.87	3.31	5.09
8	1.78	2.09	3.36	4.10
9	1.91	2.19	3.08	3.96
10	2.67	2.39	3.34	4.03
Average	2.71	3.03	4.34	5.84

Source: MOH

Table 44 shows the PPE per capita per income decile.

Table 44. Promotion and Prevention Expenditure per Capita per Income Decile

DECILES	1994	1995	1996	1997
	PPE per Capita	PPE per Capita	PPE per Capita	PPE per Capita
1	3.21	3.09	4.15	5.44
2	1.93	3.14	5.13	4.53
3	2.55	3.40	4.07	5.76
4	2.52	2.63	3.27	5.47
5	2.33	3.63	4.71	7.03
6	2.26	3.09	4.25	5.84
7	3.07	2.69	4.09	6.28
8	2.33	3.14	4.25	6.19
9	2.29	2.70	4.54	5.74
10	4.33	2.91	4.86	5.97
Average	2.67	3.04	4.33	5.83
$10^{th}/1^{st}$	1.35	0.94	1.17	1.10

Source: MOH

FISCAL LAZINESS

We used the idea of "fiscal laziness" to see if those municipalities receiving more external funding had less incentive to raise their own funds. Such a municipality would be considered more "fiscally lazy." We defined fiscal laziness as external revenue minus own source revenue divided by external revenue plus own source revenue (E-O)/(E+O). We used this ratio because it showed how the local contribution changed as a municipality's external funding and own-source funding increased and/or decreased. For example, a municipality that did not raise the same amount of their own-source revenue after receiving more external revenue was given a higher weight for fiscal laziness than a municipality that received more external revenue and also continued to generate the same amount or more of their own-source of funding. Table 45 captured this idea over the four years. Larger municipalities were less fiscally lazy and continued to generate quite a bit of their own revenue despite receiving more external revenue. Smaller municipalities were the most fiscally lazy, generating less of their own revenue as external revenue increased. Over time, however, there was a general trend for less fiscal laziness in all municipalities.

Table 45. Fiscal Laziness per Population Decile

DECILES	1994	1995	1996	1997
	(E-O/E+O)	(E-O/E+O)	(E-O/E+O)	(E-O/E+O)
1	0.96	0.96	0.94	0.94
2	0.94	0.91	0.89	0.89
3	0.86	0.84	0.75	0.79
4	0.82	0.78	0.71	0.72
5	0.82	0.80	0.67	0.74
6	0.76	0.71	0.65	0.65
7	0.80	0.73	0.65	0.65
8	0.75	0.69	0.61	0.61
9	0.70	0.62	0.54	0.60
10	0.66	0.55	0.45	0.51

Source: DNP

In terms of income deciles, poorer municipalities were more fiscally lazy than wealthier municipalities, having a higher ratio of (E-O)/(E+O). The gap between the wealthy and poor municipalities decreased over the four years.

Table 46 Fiscal Laziness per Income Decile

DECILES	1994	1995	1996	1997
	(E-O/E+O)	(E-O/E+O)	(E-O/E+O)	(E-O/E+O)
1	0.98	0.95	0.91	0.91
2	0.96	0.94	0.92	0.89
3	0.88	0.88	0.87	0.83
4	0.83	0.83	0.79	0.76
5	0.79	0.76	0.70	0.68
6	0.74	0.69	0.58	0.59
7	0.75	0.62	0.54	0.56
8	0.73	0.66	0.55	0.53
9	0.69	0.65	0.49	0.51
10	0.65	0.53	0.42	0.46
Average	0.80	0.75	0.67	0.67
$10^{th}/1^{st}$	0.66	0.56	0.46	0.51

Source: DNP

REGRESSION ANALYSIS

In the following section we attempted to explain several dependent variables related to decentralization and its effect on health care allocation choices, utilization of health care services, spending on promotion and prevention, fiscal laziness, efficiency, and funding for a national health insurance system, FOSYGA in Colombia. Of the variables we had in our data set, allocation variables were the most directly affected by decentralization of choice in the Colombian system. We attempted to explain these choices using independent variables related to certification in decentralization, income, population and urbanization.

DESCRIPTION OF DEPENDENT VARIABLES

Thirteen different regression models were analyzed under the following headings: Allocation Decisions, Allocations within the Health Sector, Performance and Local Conditions, and Human Resource Decisions. In the first model under the heading of Allocation Decisions, we attempted to explain the allocation to health from total municipal general expenditures. These funds included some intergovernmental transfers earmarked to health, some non-earmarked intergovernmental transfers, and own-source revenues not subject to central restrictions. We wanted to answer the question: What explained why some municipalities spent larger portions of these total municipal resources on health? With the second regression model under allocation decisions, we looked at the determinants of a municipalities' total health expenditure per capita. What increased or decreased a municipalities' allocation to health per inhabitant? In the third allocation decision regression model, we wanted to explain why some municipalities put more of their own-source revenues into health. This variable was one in which municipalities had the greatest "decision space" since there was no earmarking of local sources of revenue. The fourth allocation decision regression examined the determinants of municipalities' total own-source health expenditure per capita. The last regression that fell under the category of allocation decision, was a regression that explained "fiscal laziness" or why some municipalities were likely to reduce their own source funding as intergovernmental transfers increased.

Regressions number six and seven were grouped under Allocations within the Health Sector. The sixth regression, explained why some municipalities spent more on prevention and promotion than others, and again we were particularly interested to see what certification had to do with this choice. It has often been feared that greater local choice may mean less attention to prevention and promotion activities and greater spending on curative care. The seventh regression was similar to the sixth, except that it looked at allocations to promotion and prevention per capita.

The next four regressions attempted to explain Performance and Local Conditions within the municipalities. Regression number eight, attempted to explain why some municipalities had higher per capita or lower per capita utilization of health services. The ninth regression model measured the efficiency of health care and the determinants related to this measure. In the tenth regression, we regressed the amount received by each municipality, FOSYGA, to help their EPSs provide services to the subsidized population. The last regression of this category estimated the determinants for the number of persons that qualified for subsidized health care according to the SISBEN qualifying measure in each municipality.

The fourth category, Human Resource Decisions, attempted to estimate the determinants for how human resource decisions are made at the municipality level. Regression #12 estimated the determinants for the number of administrative workers in health care facilities while regression #13 looked at the determinants for the number of contract workers.

The following models were regressed according to their appropriate headings:

Allocation Decisions

Regression #1: Total Health Expenditure/Total General Expenditure (THE/TGE)

Regression #2: Total Health Expenditure per Capita (THE/capita)

Regression #3: Total Own-source Health Expenditure/Total Own-source General Expenditure (TOHE/TOGE)

Regression #4: Total Own-source Health Expenditure per Capita (TOHE/capita)

Regression #5: Fiscal Laziness (Laziness)

Allocations within the Health Sector

Regression #6: Promotion and Prevention Expenditure/THE (PPE)

Regression #7: Promotion and Prevention per Capita (PPE/capita)

Performance and Local Conditions

Regression #8: Utilization of Health Care Services per Capita (Util/capita)

Regression #9: Efficiency

Regression #10: FOSYGA

Regression #11: SISBEN Selection for Subsidized Regime

Human Resource Decisions

Regression #12: Administrative Personnel/Total Personnel (AP/TP)

Regression #13: Contract Personnel/Total Personnel (CP/TP)

DESCRIPTION OF INDEPENDENT VARIABLES

To answer the above questions we used the following dependent variables: Municipal certification and department certification were each defined as binary variables, based upon whether the municipality and/or its department had become certified under Law 60. As explained above, law 60 was passed in 1993, immediately before the beginning of this study. We wanted to know if the passing of this law, giving certified municipalities increased control over the funding called "*Situado Fiscal*", affected their health care allocation decision making.

Then we examined whether department certification had an effect on municipal health care spending. As noted above, advocates and critics of decentralization propose opposing hypotheses about the effect of decentralization on our dependent variables so we proposed a null hypothesis about the relation of certification on health care spending, fiscal laziness, spending on promotion and prevention, and health care utilization rates. We also used length of certification, for both the municipality and the department (in months), as independent variables to predict allocation decisions. Was the length of certification a good determinant for health care spending and allocation decisions?

External resources and own-source resources were the two independent variables indicative of municipal income. Both of these variables were described in more detailed above. We wanted to know if a municipality with more external resources allocated more funding to health care or had higher utilization rates than a municipality with less external resources. Did municipalities with more external resources have higher levels of spending on promotion and prevention and/or were they less lazy? Did own-source resources affect any of these same allocation decisions on health care? We hypothesized that the more external and own-source resource available to the municipality, the more they would spend on health care and promotion and prevention, the higher their utilization rates, and the less fiscally lazy the municipality.

Our last two independent variables were municipal population size and percent living in urban areas. Municipal population size has not been evenly distributed in Colombia over the past few years. As was shown above in table 5 the majority of the population, 68.35% in 1997, fell into the largest population deciles. We included municipality size in our analysis to see whether this was a useful determinant of allocation to health care, spending on promotion and prevention, level of utilization, and in determining which municipalities were fiscally lazy. In using percent living in urban areas, we wanted to know if those municipalities with a higher percentage of persons living in urban areas made different health care decisions than those municipalities with more persons living rural areas? We hypothesized that both larger and more urban municipalities would allocate more funding to health care, would have higher levels of spending on promotion and prevention and utilization rates, and would be less fiscally lazy.

Table 47 gives a brief description of all of the above mentioned variables, along with the mean and standard deviation over all four years (except for FOSYGA which was only available in 1997). All of the variables will be used in the regression analysis.

Table 47. Description of Variables

VARIABLE NAME	MEAN	STANDARD DEV.
Total population in each municipality/10000	37,019	205,149
Percent of the population in urban areas	54	30
Percent of the population with basic necessities met	48	18
Rich/Poor classification; 1=richest 0=poorest	0.13	0.34
Municipality Certification; 1=certified 0=not certified	0.11	0.32
Department Certification; 1=certified 0=not certified	0.41	0.49
Months the municipality has been certified (starting from 1/1/94)	1.13	4.9
Months the department has been certified (starting from 1/1/94)	7.11	11.2
Total # of person-hours worked by administrative contract workers	3.9	25.0
Total #of person-hours worked by administrative civil workers	33.2	162.3
Total #of person-hours worked by clinical contract workers	3.4	20.3
Total #of person-hours worked by clinical civil workers	45.7	192.9
Total external revenue (x 1000 pesos)*	1,186,244	4,290,491
Total own-source revenue (x 1000 pesos)*	1,014,683	8,254,722
Total health expenditure/total general expenditure	0.48	0.29
Total own-source health expenditure/total own-source general expenditure	0.88	0.27
Total Health Expenditure per Capita (x 1000 pesos)*	39.15	44.16
Total general services (outpatient + inpatient) per capita	0.68	0.56
Total promotion and prevention expenditure/total health expenditure	0.17	0.21
Fiscal Laziness, (E-O)/(E+O)	0.67	0.36
Total # in subsidized regime covered by National Health Insurance Program under EPSs	6123	21885
FOSYGA (x 1000 pesos)	31,4576.6	414,034.8
Efficiency (total health expenditure/total general services) (x 1000 pesos)*	255.53	3212.31

*Figures from 1994-1996 have been adjusted according to consumer price index for 1997

We used the following regression model to estimate the dependent variables for the thirteen regression models.

DESCRIPTION OF ORDINARY LEAST SQUARES MODEL

An ordinary least squares regression model (OLS), was used in each of the five regression models. For example:

(THE) = *f* (population, % urban, municipality certification, department certification

(TGE) months municipality certified, months department certified, external

revenue, own-source revenue)

All other dependent variables were regressed using the same model with the exception of the dependent variable "fiscal laziness", whose equation did not include the independent variables on resources. The number of subsidized persons enrolled in the national health insurance program was added as an independent variable in two regressions.

The models were described using β-coefficients and z-scores. β-coefficient measured the magnitude of effect of the independent variable on the dependent variable. The z-score told us whether the magnitude, as stated by the β-coefficient, was statistically significant from zero. The z-score was calculated by dividing the β-coefficient by the standard

error of the variable. A β-coefficient with one asterisk was with two asterisks was only moderately significant, having a z-score of 1.5 to 2.0.

(See Annex A for the panel model description and analysis of the same regressions.)

ALLOCATION DECISION REGRESSION

Regression #1. Total Health Expenditure/Total General Expenditure (THE/TGE)

Table 48 presents the OLS (Model #1) for the dependent variable "THE/TGE" for the years 1994-1997.

Table 48. OLS for THE/TGE for 1994-1997

MODEL #1	1994 (N=956)		1995 (N=953)		1996 (N=971)		1997 (N=928)	
Independent Variables	β-Coef	z	β-Coef	z	β-Coef	z	β-Coef	z
Constant	0.1921*	4.52	-.1742	-1.28	-.1004	-1.10	-.1561	-1.02
Municipality Certification	-0.0608	-0.99	-.0615	-0.85	-.0338**	-1.55	.0111	0.49
Department Certification	-0.0034	-0.17	.0691	0.84	.0569*	2.49	.0583*	2.42
Months Dept certified	-0.0044	-1.35	-.0054	-1.12	-.0021*	-2.51	-.0020*	-2.48
Months Mun certified	-0.0070	-1.02	-.0004	-0.11	.0011	0.73	.0001	0.07
External resources	.0155*	3.85	.0457*	3.76	.0381*	4.94	.0387*	3.26
Own resources	.0272*	24.04	.0220*	11.35	.0187*	15.54	.0212*	15.46
Population	0.0001	0.92	-.0008*	-3.93	-.0008*	-5.57	-.0009*	-5.53
% Urban	-.0697*	-2.92	-.0520**	-1.90	-.0720*	-2.98	-.0691*	-2.02
R^2	0.6238	----	0.6101	----	0.5429	----	0.4644	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

The regressions showed that a significant portion of the variation (62% in 1994) was explained by the independent variables.

For all four years, as was seen in table 48, total municipal own source revenue was the best predictor of what proportion the municipality would allocate to health (Z=24.04 in 1994; Z=11.35 in 1995; Z=15.54 in 1996; Z=15.46 in 1997). Wealthier municipalities had higher allocations to health. Own revenue was a much stronger determinant of health care spending than external revenue with higher z-scores for all years. The β-coefficients for own revenue and external revenue were small, reaching only β=0.027 and β=0.045 respectively. Population also influenced allocation to health, however in an unanticipated way. Municipalities with larger populations and a larger percentage in urban areas, spent less on health care in relation to other spending (except for 1994 when population size was positive but insignificant). Again the magnitude of the effect was low for both variables.

In general this regression suggested that decentralization certification did not have much of an influence on allocation decisions from total revenues to health -- confirming our null hypothesis. However we did have some interesting and unanticipated findings. As can be seen in table 48, the relationship between municipality certification and health care spending was

not significant, except for the year 1996. In 1996, the coefficient of municipal certification was negative, implying that those municipalities that were not certified allocated more of their funding to health care. These results were contrary to decentralization advocate's predictions about municipality certification. They would have hypothesized that municipality certification would be a strong positive predictor of increased allocations to health care, especially with the municipalities' increased control over *Situado Fiscal*. The only year these predictions were correct was in 1997, when the β-coefficient for municipality certification was positive, but insignificant ($Z = 0.49$).

This relationship between municipality certification and health care expenditure might be explained by the pattern of municipality and departmental certification which affected capacity to manage local funds. In 1994, according to our data base, only 19 municipalities became certified. An additional 8 more became certified in 1995. In 1996, the number of new municipalities jumped to 95. It might be that this rapid increase in certification was not accompanied by sufficient department and municipal capacity to manage the new volume of resources causing the decrease in health care spending for this year. In 1997 although there were almost 200 new municipalities certified, it appears that the departmental and municipal capacities had improved since the β-coefficient for municipality certification became positive, although not significant. Decentralization and the process of certification had been in place for four years, this was the second year of implementation of the new social insurance program with considerable technical assistance provided to the municipalities, and the newly certified municipalities may have learned from their certified neighbors how to manage funds and what to expect from decentralization.

We saw a similar pattern of increased capacity to manage devolved funding with decentralization over time with department certification. The β-coefficient for department certification became positive and significant in 1996 and 1997. It was insignificant the previous two years. The pattern of department certification as seen in Tables 15, showed that 331 municipalities were under the jurisdiction of certified departments in 1994; 6 more in 1995. 1996 had the final surge, increasing the number to 542 municipalities under the jurisdiction of certified departments. There was no change in 1997. By 1996 and 1997, departments were better able to prepare their municipalities for what to expect from decentralization and in managing their *Situado Fisca*". During these years, municipalities devoted more funding to health care.

Length of municipality certification was not significantly related to health care expenditure but the pattern was consistent with the results for municipality certification and department certification. In the early years, 1994 and 1995, the β-coefficients, although small, were negative implying that those municipalities that had been certified the longest were investing little in health care. However, the β-coefficients became positive in 1996 and 1997, implying that the newly certified municipalities allocated less to health care than did the longer certified municipalities.

The length of department certification also became significant later in the study period. The β-coefficient was negative every year. The longer the municipalities' department was certified the less the municipality allocated to health care. The length of municipality certification variable showed that newly certified municipalities allocated less to health care in 1996 and 1997. This being the case, longer certified departments may have been certifying these municipalities during these years. Certain characteristics of these newly certified municipalities may be related to their low levels of health care expenditures.

Regression #2. Total Health Expenditure per Capita (THE/capita)

Table 49 shows the OLS regression for Total Health Expenditure per Capita (THE/capita).

Table 49. OLS for THE/capita for 1994-1997

MODEL #1	1994 (N=1042)		1995 (N=1042)		1996 (N=1042)		1997 (N=1042)	
Independent Variables	β-Coef	Z	β-Coef	Z	β-Coef	z	β-Coef	z
Constant	6.5932*	9.53	9.1914*	6.90	15.6112*	7.70	-19.595	-1.07
Municipality Certification	-1.5835	-0.29	-2.68742	-0.34	-6.7553*	-3.19	-6.179*	-2.12
Department Certification	-4.133*	-3.77	46.4175	1.42	-8.1173*	-2.16	-15.23*	-3.66
Months Dept certified	-.7905*	-5.06	-3.334**	-1.75	-.1638**	-1.52	.25066*	2.13
Months Mun certified	-.17144	-0.31	-.036901	-0.08	.141438	0.73	.250132	1.19
External resources	.55744*	12.05	.862389*	8.95	1.59864*	12.81	4.7709*	3.29
Own resources	1.3859*	18.91	2.0423*	10.58	2.43916*	14.50	3.4655*	15.64
Population	----	----	----	----	----	----	----	----
% Urban	.98001	0.66	-2.0047	-0.74	-5.807**	-1.59	-18.34*	-3.75
R^2	0.4040	----	0.2794	----	0.3354	----	0.3732	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

As can be seen in table 49, municipality certification was a negative determinant of total health expenditure per capita in 1996 and 1997. This implied that for these years, municipalities that were certified had lower levels of total health expenditure per capita than those municipalities that were not certified. The large increase in certified municipalities during 1996 and 1997 may have put pressure on the health care system causing this decrease in health care spending per capita. Department certification was a negative, significant determinant of health care spending per capita for all years except 1995. This implied that municipalities under the jurisdiction of non-certified department, rather than certified departments, had higher levels of health care spending per capita. This result was contradictory to other results seen above where municipalities under the jurisdiction of certified departments did better than those under the jurisdiction of non-certified departments. The large surge in certification over this time period may explain the decreased health care spending per capita.

Length of department certification was negative and significant for years 1994-1996, becoming positive and significant only in 1997. For years 1994-1996, municipalities under the jurisdiction of longer certified departments had lower health care spending per capita than those municipalities under the jurisdiction of newly certified municipalities. In 1997, the opposite trend was seen, municipalities under the jurisdiction of longer certified departments had higher health care spending per capita.

Consistent with previous regressions, external and own-source resources were both positive and significant determinants of health care spending per capita for all four years. The more external and own-source resources available to the municipalities for health care spending, the more they spent per capita on health care. Own-source resources was a stronger determinant, in both magnitude and significance, than external resources.

The only other determinant of health care spending per capita was the percent of person living in urban areas. In 1996 and 1997, percent living in urban areas was a negative, significant determinant of health care spending. This implied that those municipalities with

more persons living in urban areas spent less on health care per person than the more rural municipalities.

Regression #3. Total Own-Source Health Expenditure

The following table shows the OLS (Model #1) for the dependent variable "Total Own source health expenditure divided by total own source general expenditure (health plus education, environment, and recreation) (TOHE/TOGE)."

Table 50. OLS for the TOHE/TOGE for years 1994-1997

MODEL #1	1994 (N=550)		1995 (N=)		1996 (N=662)		1997 (N=710)	
Independent Variables	Coeff.	Z	Coeff.	Z	Coeff.	Z	Coeff.	Z
Constant	----	----	-.0792	-0.50	-.0751	-1.18	.3647*	2.22
Municipality Certification	----	----	.0767	1.01	-.0157	-0.59	.0202	1.11
Department Certification	----	----	-.0517	-0.49	.0989*	3.79	.0685*	2.93
Months Dept certified	----	----	.0037	0.63	-.0009	-1.06	-.0013*	-2.34
Months Mun certified	----	----	-.0112*	-2.13	-.0022	-1.06	-.0005	-0.57
External resources	----	----	.0399*	2.85	.0321*	7.07	-.0047	-0.38
Own resources	----	----	.0508*	21.48	.0497*	41.75	.0533*	32.79
Population	----	----	-.0014*	-4.77	-.0018*	-5.60	-.0014*	-8.74
% Urban	----	----	-.2627*	-5.59	-.2183*	-5.59	-.1492*	-4.22
R^2	----	----	0.5366	----	0.5948	----	0.5818	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

As can be seen in table 50, the OLS for 1994 was not estimated because the ratio of the dependent variables had a value of one for all municipalities, meaning the municipalities allocated all of their own-source revenues on health care. (This did not include external revenue or other than own source revenue).

The relationship between municipality certification and own source health expenditure was not significant for any year. Similar to the previous regression on general expenditure; however, 1996 was an interesting year in this regression as well. 1996 was the only year the coefficient for municipal certification became negative. As hypothesized above, this change in 1996 may have been related to the jump in municipality certification during this year. Then in 1997, the coefficient for municipality certification, although not significant, returned positive as municipalities adjusted to decentralization, managing their own revenues more effectively.

Department certification was a significant and positive determinant of own source health expenditure in 1996 and 1997. 1996 was an important year for this independent variable as well. Municipalities under the jurisdiction of certified departments began to allocate more of their own revenues to health care in this year.

Length of municipal certification was a negative determinant of own source health expenditure for all years, but was only significant in 1995. Among all municipalities, the longer certified ones allocated less of their own revenue to health care.

In 1997, the length the department was certified was a significant but negative determinant of own source health expenditure. This result was similar to what we saw above in the regression on total health expenditure. The municipalities under the jurisdiction of longer certified departments allocated less of their own revenues, perhaps because they had less, to health care.

External revenue and own source revenue were both positive significant determinants of own source health expenditures, except in 1997. In this year, external revenues became insignificant and negative. For all three years, 1995-1997, own revenue was again an overwhelmingly significant positive determinant of the dependent variable. All β-coefficients, for both variables, measuring the magnitude of the effect, were small.

Population and the percent of inhabitants living in urban areas of each municipality were the only other determinants of own source health expenditure. Both variables were negative and significant, implying, contrary to our hypotheses, that larger and more urban municipalities allocated less from their own sources to health care.

Regression #4. Total Own Source Health Expenditure per Capita

Table 51 shows the regression for TOHE per capita.

Table 51. OLS for the TOHE per capita for years 1994-1997

MODEL #1	1994 (N=550)		1995 (N=564)		1996 (N=614)		1997 (N=672)	
Independent Variables	Coeff.	Z	Coeff.	Z	Coeff.	Z	Coeff.	Z
Constant	-.74574	-0.51	-12.609*	-4.67	-30.631*	-7.63	6.2048	0.73
Municipality Certificat'n	1.1161	0.96	-1.2074	-0.76	.13749	0.12	.30116	0.25
Department Certification	-.557**	-1.85	-3.037**	-1.51	-2.788*	-2.66	-5.422*	-3.42
Months Dept certified	-.1036*	-2.87	.1343**	1.13	.07966*	2.31	.08773*	2.18
Months Mun certified	-.10460	-0.73	.05447	0.48	-.1190**	-1.33	.0854**	1.04
External resources	-1.299*	-8.12	-1.1303*	-2.84	-.4871**	-1.39	-7.183*	-7.06
Own resources	1.985*	13.57	3.0711*	7.12	4.3931*	15.42	9.56*	12.40
Population	----	----	----	----	----	----	----	----
% Urban	-.36804	-0.66	-2.3056*	-2.37	-4.7071*	-2.99	-9.184*	-4.50
R^2	----	0.4484	0.4415	----	0.3785	----	0.3813	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

Municipality certification was not a significant determinant of own source health care spending per capita. Municipalities under the jurisdiction of certified departments was a negative, significant determinant of TOHE per capita for all four years, implying that these municipalities had lower TOHE per capita than those municipalities under the jurisdiction of non-certified departments.

Length of municipality certification was a significant determinant of TOHE per capita in 1996 and 1997. In 1996 it was negative and in 1997 it was positive. This implied that in 1996 those municipalities that had been certified for a longer period of time had lower TOHE per capita, while in 1997 those same municipalities that were certified for longer had higher TOHE per capita. Length of department certification was a negative determinant of TOHE per capita in 1994 and then became a positive determinant for the years 1995-1997. For these last three years, the longer the department was certified the more TOHE per capita for the municipalities under their jurisdiction.

The more external revenue in a municipality, the less TOHE per capita. The more own source revenue in a municipality, the more TOHE per capita.

The more urban the municipality, the less TOHE per capita. Rural municipalities had higher TOHE per capita than urban municipalities.

Regression #5. Fiscal Laziness

Table 52 shows the results of the OLS for the dependent variable Fiscal Laziness, which was defined above. The larger and more positive the coefficient the more fiscally lazy the municipality, having a tendency to use more external revenue and generate less of their own revenue.

Table 52. OLS for Fiscal Laziness for 1994 - 1997

MODEL #1	1994 (N=944)		1995 (N=951)		1996 (N=971)		1997 (N=1039)	
Independent Variables	Coeff.	Z	Coeff.	Z	Coeff.	Z	Coeff.	Z
Constant	.9116*	67.14	.9053*	57.231	.9030*	48.30	.9211*	63.12
Municipality Certification	.1598	1.11	.1360	1.435	-.0734**	-1.68	-.0194	-0.85
Department Certification	-.0779*	-2.98	.4737*	7.090	-.0782*	-2.37	-.1489*	-6.16
Months Dept certified	-.0323*	-8.15	-.0436*	-11.67	-.0071*	-5.28	-.0039*	-4.56
Months Mun certified	-.028**	-1.99	-.0152*	-2.93	-.0035	-1.25	-.0057*	-4.27
Population	-.0005	-0.94	-.0015**	-1.87	-.0015*	-2.10	-.0011*	-2.73
% Urban	-.0650*	-2.06	-.1332*	-3.82	-.1900*	-4.54	-.1483*	-4.64
R^2	0.2725	----	0.3552	----	0.2464	----	0.3451	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

As can be seen table 52, municipality certification was not a significant determinant of fiscal laziness except in 1996. In 1996, municipality certification was negative, implying that certified municipalities were less lazy. In the previous years, 1994 and 1995, although not significant, certified municipalities were lazier. As in the previous regression, there was often a significant change in 1996. In terms of fiscal laziness, we saw here that in this year, despite receiving more external revenue, certified municipalities, continued to raise their own sources of funding. The same relationship existed in 1997 but was not significant.

Department certification was a significant determinant of fiscal laziness for all years, starting off negative in 1994, becoming positive in 1995 and then becoming negative again in 1996 and 1997. This trend signified that municipalities whose departments were certified were less lazy in 1994, become lazier in 1995 and then return to being less lazy in 1996 and 1997. In 1994, the large number of departments that were certified in some way did not deter municipalities from continuing to generate their own revenues. In 1995, only 6 new departments were certified. In this year, municipalities under the jurisdiction of certified departments did not generate as much of their own revenue in proportion to external revenues. By 1996 and 1997, however, the number of department being certified stabilized and municipalities under their jurisdiction began to generate their own sources of funding once more.

The length the department was certified was a negative and significant determinant of fiscal laziness for all years. Municipalities under the jurisdiction of longer certified departments were less lazy, continuing to raise significant own revenues in proportion to external revenues. In the previous regressions, we saw that municipalities under the jurisdiction of longer certified departments also tended to allocate fewer resources to health care. Even though these municipalities were receiving more external revenue and still generating a significant amount of their own revenues, they allocated less to health care. The length the municipality was certified was negative and significant for all years except 1996. Again, the year 1996 did not follow the same pattern as the other years.

The only other determinants of fiscal laziness were population size and percent living in urban areas. Population size was negative and significant for all years except 1994, while the percent living in urban areas was significant and negative over all years. This implied that in general larger municipalities and more urban municipalities were less lazy.

ALLOCATIONS WITHIN THE HEALTH SECTOR REGRESSION

Regression #6. Promotion and Prevention

Table 54 outlines the results of the OLS (Model #1) for the dependent variable "Promotion and Prevention Expenditure in proportion to the total health Expenditure" (PPE/THE).

Table 54. OLS for PPE/THE for years 1994 - 1997

MODEL #1	1994 (N=695)		1995 (N=808)		1996 (N=914)		1997 (N=867)	
Independent Variables	Coeff.	Z	Coeff.	Z	Coeff.	Z	Coeff.	Z
Constant	.3999*	6.82	.7243*	5.14	.4924*	5.06	.7906*	8.26
Municipality Certification	-.0470*	-2.75	.1391	1.25	-.0066	-0.43	.0033	0.27
Department Certification	.0118	0.42	.0321	0.55	-.0436*	-3.02	-.0486*	-3.76
Months Dept certified	-.0028	-0.79	-.0044	-1.41	.0007**	1.64	.0004	1.09
Months Mun certified	.0029**	1.84	-.0045	-0.90	.0021*	2.61	.0028*	4.78
External resources	-.0112*	-2.08	-.0390*	-3.06	-.0225*	-2.74	-.0444*	-6.00
Own resources	-.0172*	-11.4	-.0142*	-6.64	-.0073*	-5.85	-.0057*	-5.65
Population	.0013*	14.9	.0008*	3.51	.0004*	2.20	.0003**	1.77
% Urban	-.0143	-0.45	.1054*	2.67	-.0049	-0.23	.0071	0.32
R^2	0.3876	----	0.3892	----		----		----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

As can be seen from table 54, the relationship between municipality certification and allocations to promotion and prevention was not significant, except for the first year, 1994. In this year, municipality certification was a negative significant determinant of promotion and prevention expenditure. Decentralization had its effect on promotion and prevention early in the study period. We did not see any effects of the increase in certified municipalities in 1996 as we saw in the previous regressions.

The increase in municipality certification in 1996 did affect department certification, however, which became negative and significant for both years 1996 and 1997. This implied, as we saw above, something happened in 1996 that caused those municipalities whose departments were certified to allocated less to promotion and prevention.

The length of time the department was certified was not significant except in 1996, when the length of time the department was certified positively affected promotion and prevention. The municipalities under the jurisdiction of longer certified departments allocated more to promotion and prevention. These municipalities were probably some of the older municipalities themselves, had been certified for a while and were therefore able to allocate more to promotion and prevention.

The length the municipality was certified was a positive significant determinant of promotion and prevention for all years except 1995, when it was negative but insignificant. Again, longer certified municipalities, more comfortable with decentralization and certification, were able to allocate more to promotion and prevention.

For all years, both external revenue and own revenue were negative significant determinants of promotion and prevention, implying those municipalities that generated more external revenue and/or own revenue allocated less to promotion and prevention. In the regressions for total health expenditure and total own-source health expenditure, municipalities with more external and own revenues allocated more to health. The opposite was true of promotion and prevention. Own revenue (higher Z-scores) was a much stronger negative determinant of promotion and prevention than external revenues. External revenues (larger β-coefficients), however, had a larger magnitude of effect on the allocation to promotion and prevention than own revenue (smaller β-coefficients).

The only other determinants of promotion and prevention were population size and percent living in urban areas. Population size of the municipality was positive and significant for every year. This was the only regression that yielded results in agreement with our hypotheses on population size. As we expected larger municipalities allocated more to promotion and prevention. Percent living in urban areas was only significant in 1995 and 1997. In 1995 percent living in urban areas was positive, while in 1997 it was negative. At first, as we expected, the more urban the municipality the more it allocated to promotion and prevention, however, by 1997 the more urban municipalities were allocating less to promotion and prevention.

Regression #7. Promotion and Prevention per Capita

Table 55 presents the results of the regression model for allocation to promotion and prevention per capita.

Table 55. OLS for PPE per capita for years 1994 - 1997

MODEL #1	1994 (N=695)		1995 (N=808)		1996 (N=914)		1997 (N=867)	
Independent Variables	Coeff.	Z	Coeff.	Z	Coeff.	Z	Coeff.	Z
Constant	.60674	0.93	2.6129*	2.99	4.469*	3.59	25.59**	1.22
Municipality Certification	-.572**	-1.81	-.83581*	-2.64	.16078	0.35	.24167*	4.45
Department Certification	-.459**	-1.81	.206182	0.32	-.6158**	-1.56	-1.27*	-2.01
Months Dept certified	.0271	0.65	-.02599	-0.71	.00933	0.67	.0335**	1.64
Months Mun certified	.10645	1.16	.08296**	3.13	.05382*	2.14	.2417*	4.45
External resources	.1215*	2.05	-.03185	-0.40	-.00971	-0.09	-1.514*	-3.68
Own resources	-.0194	-1.11	-.01167	-0.61	-.008212	-0.35	.13158*	3.15
Population	----	----	----	----	----	----	----	----
% Urban	-.590**	-1.56	.03189	0.063	-1.0347*	-2.14	-2.190*	-2.16
R^2	0.0100	----	0.0102	----	0.0096	----	0.1105	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

Municipality certification was a negative, significant determinant of PPE per capita for years 1994 and 1995, then became a positive determinant for PPE per capita for 1996 and 1997 (only significant in 1997). This implied that in the early years, those municipalities that were certified allocated less to promotion and prevention per capita than those municipalities that were not certified. This trend reversed in 1996 and 1997, when certified municipalities allocated more to PPE per capita than non-certified municipalities. Department certification was negative and significant all years except 1995. This implied that those municipalities under the jurisdiction of certified departments allocated less to PPE per capita than those municipalities under the jurisdiction of non-certified municipalities.

Length of municipality certification was a positive, significant determinant of PPE per capita for all years except 1994. This implied that those municipalities certified for a longer length of time allocated more to PPE per capita than younger municipalities. Length of department certification was only significant in 1997, when it was positive, implying that municipalities under the jurisdiction of older departments allocated more to PPE per capita.

The trend for external and own source revenue and PPE per capita was not strong.

For all years except 1995, more rural municipalities allocated more to PPE per capita.

The low R-square values for all regression models implied that only a small proportion (less than 10% in each regression) of the variation was explained by the independent variables.

PERFORMANCE AND LOCAL CONDITIONS REGRESSION

Regression #8. Utilization of Health Care Services per capita

Table 56 contains the results of the OLS for the dependent variable Utilization of Health Care Services per Capita (Util/capita).

Table 56. OLS for the Utilization of Health Care Services per Capita for years 1994 - 1997

MODEL #1	1994 (N=613)		1995 (N=616)		1996 (N=578)		1997 (N=594)	
Independent Variables	Coeff.	Z	Coeff.	Z	Coeff.	Z	Coeff.	Z
Constant	.6510*	8.39	5.409*	7.99	3.450*	4.18	3.334*	9.57
Municipality Certificat'n	-.2050*	-2.18	12.95	1.05	-1.355*	-2.75	-.0307	-0.68
Department Certification	.1127*	2.36	-1.143	-0.40	-1.296**	-1.99	-.3552*	-4.93
Months Dept certified	-.0075	-1.19	.1009	0.61	.0294	1.29	.0053*	3.65
Months Mun certified	.0033	0.25	-.6042	-1.133	.0650*	3.09	.0062*	2.71
External resources	-.0113**	-1.66	.0028	0.07	.0054	0.09	-.2009*	-7.17
Own resources	.0231*	10.62	.1685*	5.50	-.0555	-1.35	.0506*	7.93
Managed Care	----	----	----	----	-.0001*	-2.08	-0.0000	-1.24
Population	----	----	----	----			----	----
% Urban	-.3282*	-5.73	-4.680*	-3.56	-.8032	-0.77	-.3832*	-4.27
R^2	0.1181	----	0.1153	----	0.0290	----	0.1685	----

* |z| >2.00 ** 1.5<|z|<2.00

As can be seen table 56, municipality certification was significant but negative for 1994 and 1996. For these two years, municipalities that were certified provided less health care services per capita than those municipalities that were not certified. In 1994, certification was a new process for the municipalities and in 1996 there was a jump in certification, also seen above in the first two regressions. Both of these changes may have caused the decrease in utilization of health care services seen for these two years.

Department certification was a positive significant determinant for utilization of health care services in 1994 then became negative and significant in 1996 and 1997. This trend implied that those municipalities under the jurisdiction of certified departments had a high level of utilization of health care services per capita in 1994 and then in 1996 and 1997 this level decreased. Something happened in 1996 to make these changes. In the previous two regressions above, in 1996 department certification became a positive determinant of both THE and TOHE in 1996. In this regression, the opposite occurred. Department certification became a negative determinant of utilization rates. It was interesting that during the same

years that municipalities were allocating more of their own revenue and external revenues to health care there was not an increase in utilization.

In 1996 and 1997, the length the municipality was certified was a positive significant determinant of utilization of health care services. The longer certified municipalities were able to offer more health care services. In 1997, the length the department was certified was positive and significant with utilization of health care services. This implied that the municipalities under the jurisdiction of longer certified departments offered more health care services per capita. These results contradicted what we found in the regressions for THE and TOHE. In these regressions, municipalities under the jurisdiction of older municipalities allocated less to both THE and TOHE. It seems hard to believe that municipalities with low allocations to health care would also have high levels of utilization. The only explanation for these conflicting results might be the low numbers of municipalities that reported utilization figures. The small values for N in this regression may have skewed the results.

The β-coefficients and Z-scores for own revenue and external revenue followed a more normal pattern to the previous regressions. Own revenue was a positive significant determinant for utilization of health care services for all years except 1996. In 1996, own revenue was negative and insignificant. Again, 1996 was an interesting year, perhaps due to the large jump in municipality certification. External revenue was a significant negative determinant for utilization in 1994 and 1997. In 1994, one of the first years of decentralization, those municipalities with less external revenue had lower rates of health care utilization per capita. The large increase in certified municipalities in 1996 seemed to have had a delayed effect on the relationship between utilization rates and external revenue; the relationship became negative in 1997.

The number of persons enrolled in the National Insurance Program was included as a variable in 1996 and 1997. In 1996, the number of persons enrolled in this program was negative and significant. In 1997, the number of persons was negative and insignificant. In the first year of operation of the national insurance program, those municipalities with more persons enrolled in the program offered less utilization of health care services per capita to their populations. Again, we saw a time lag for positive results.

The only other determinant for utilization was the percent of persons living in urban areas which was negative and significant for all years except 1996, when it was insignificant. This implied that more urban municipalities, contrary to our hypotheses, offered less health care services per capita.

Regression #9. Efficiency—Total Health Expenditure in proportion to Utilization of Health Care Services

Again, with the caveat explained above, we defined "efficiency" as amount spent in pesos per unit of health care. The more spent per unit of health care the less efficient the municipality. Table 58 shows the results of this regression.

Table 58. OLS for Efficiency of Health Care Utilization 1994 - 1997

MODEL #1	1994 (N=611)		1995 (N=616)		1996 (N=585)		1997 (N=592)	
Independent Variables	β-Coeff.	Z	β-Coeff.	Z	β-Coeff.	Z	β-Coeff.	Z
Constant	-21.80*	-2.91	-52.66*	-2.15	-130.98	-2.69	-1742.822	-3.622
Municipality Certificat'n	-23.91	-0.58	-71.63*	-2.04	7.31	0.32	108.00	1.28
Department Certification	-11.04	-1.19	-14.88	-0.20	-16.92	-0.53	41.69	1.05
Months Dept certified	-1.80	-1.49	.00018	0.00	-1.96*	-2.16	-2.64*	-2.23
Months Mun certified	8.20**	1.50	6.37*	2.02	1.89	0.48	-3.63	-0.69
External resources	3.26*	6.82	4.85*	3.68	12.97*	3.38	133.04*	3.82
Own resources	1.84*	5.99	3.09*	5.76	1.07	0.94	-3.65	-1.20
Managed Care	----	----	----	----	.0046**	1.59	-.0053	-1.06
Population	.3677	0.78	.7359	0.89	-2.78	-1.49	6.92	0.93
% Urban	49.43*	3.96	89.99*	2.95	177.33*	3.14	126.76*	2.45
R^2	0.2663	----	0.1353	----	0.1242	----	0.1530	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

Table 58 shows that municipality certification was only a significant determinant of efficiency in 1995. In this year alone, those municipalities that were certified had better efficiency rates, less expenditure per unit of health care, than those that were not certified. The coefficients for municipality certification were positive in 1996 and 1997, however, signifying that certified municipalities would be less efficient if the relationship was significant. Department certification was a negative determinant of efficiency for all years, but was not significant.

Length of department certification was significant in 1996 and 1997. In these years, municipalities under the jurisdiction of longer certified departments were more efficient. Length of municipality certification was a significant and positive determinant of efficiency in 1994 and 1995. This implied that in these years, longer certified municipalities were less efficient than newly certified municipalities.

External revenue was a positive and significant determinant of efficiency for all years, implying that those municipalities with more external revenue were actually less efficient than those with less external revenue. In 1994 and 1995, own-source revenue was also positive and significant. For these years, those municipalities with more own-source revenues were less efficient. This relationship became insignificant in 1996 and 1997. These results were contrary to our original hypotheses and previous regression results.

Population size was a not significant any year, however, percent living in urban areas was significant and positive for all years. This implied that municipalities with more persons living in urban areas were less efficient than their more rural counterparts.

The amount of subsidized persons enrolled in the national insurance system and covered by EPS was a positive and significant determinant of efficiency in 1996 only. This implied that in 1996, the more subsidized persons covered by EPS insurance in each municipality, the less efficient the municipality in terms of utilization of health care.

Regression #10. FOSYGA

FOSYGA was the surplus collected by EPSs from the risk-adjusted capitation rate for each beneficiary enrolled in the contributory regime. This additional municipal revenue was to be used to help EPSs provide services to any person they enrolled from the subsidized regime. FOSYGA first appeared in municipal budgets in 1997. We hypothesized that certified municipalities and/or those under the jurisdiction of certified departments, along with more wealthy, larger and more urban municipalities would have larger FOSYGA accounts. Two

additional independent variables were added to this regression: municipal classification and INBI, as they also became available for the first time in 1997.

Table 59. OLS for FOSYGA for 1994 - 1997

MODEL #1	1997 (N=1030)	
Independent Variables	β-Coeff.	Z
Constant	-2915.28*	-12.39
Municipality Certification	54.92**	1.84
Department Certification	-17.86	-0.61
Months Dept certified	-1.31	-1.03
Months Mun certified	6.29**	1.93
External resources	239.53*	13.42
Own resources	-12.62*	-7.99
Population	6.12*	3.27
% Urban	-11.62	-0.36
INBI	129.94*	2.73
Mun. Class.	77.527**	1.35
R^2	0.5894	----

- $|z| > 2.00$ ** $1.5 < |z| < 2.0$

Municipality certification was a positive, significant determinant of FOSYGA funding. This implied that those municipalities that were certified by 1997, received more FOSYGA funding than those municipalities that were not certified. This meant that they should also have had more of their subsidized populations receiving health care services through EPSs. Department certification was not significant.

Length of department certification was not significant, however length of municipality certification was a significant and positive determinant of FOSYGA funding. Those municipalities that were certified for longer received more FOSYGA.

External resources was a positive, significant determinant of FOSYGA funding, while own revenue was negative and significant. Unlike in previous regressions, here external and own revenue predicted in opposite directions. The more external revenue a municipality had the more FOSYGA funding they received while at the same time the more own-source revenue they had the less FOSYGA funding they received.

Larger municipalities were more likely to have higher levels of FOSYGA funding. Percent living in urban areas was insignificant. The higher the percent of unmet basic necessities (INBI) the more FOSYGA funding received and wealthier municipalities (according to the municipality classification code) received more FOSYGA funding.

Regression #11. SISBEN Classification

Table 60 shows regression for the number of persons registered under the subsidized regime for each municipality based upon the SISBEN classification. The subsidized regime was selected based upon the score received through the SISBEN interview. The interview classified each household in terms of poverty level. The lower the poverty level, the more likely the household would be classified under the subsidized regime. Those under the subsidized regime received free health care under the POSS (Plan Obligatorio de Salud Subsididiado). Data for SISBEN classification was only available for 1996 and 1997.

Table 60. OLS for SISBEN for 1996 - 1997

MODEL #1	1996 (N=1030)		1997 (N=1026)	
Independent Variables	β-Coeff.	Z	β-Coeff.	Z
Constant	1981.69*	5.87	297.77	0.05
Municipality Certification	372.82	0.91	1969.49*	2.38
Department Certification	-627.11*	-2.04	-651.90	-1.16
Months Dept certified	2.29	0.18	-.4875	-0.015
Months Mun certified	111.66*	2.10	-194.25*	-2.10
External resources	30.34*	2.18	100.93	0.20
Own resources	43.58*	3.98	49.74	1.07
Population	609.24*	50.25	1414.06*	12.14
% Urban	425.36	1.24	-2088.83*	-4.10
INBI	564.32	1.15	1975.26*	2.98
Mun. Class.	3215.85*	5.70	-4895.54*	-4.02
R^2	0.9601	----	0.9590	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

Municipality certification was a significant, positive determinant of number of subsidized in 1997. In this year, those municipalities that were certified had higher numbers of subsidized inhabitants than those municipalities not certified. Department certification followed the opposite pattern. In 1996, department certification was a negative, significant determinant of number subsidized. This implied that in this year, those municipalities under the jurisdiction of non-certified departments had more subsidized than those municipalities under the jurisdiction of certified departments. In 1997, department certification was negative but not significant.

Length of municipality certification was a negative, significant determinant of the number subsidized in 1996 and became a positive, significant determinant of number subsidized in 1997. This implied that initially, the longer the municipality was certified the less subsidized they would have. By 1997, however, the municipalities certified for longer had more subsidized inhabitants. Length of department certification was not a significant determinant of number subsidized for either year.

External revenue and own source revenue were both positive, significant determinants of number subsidized in 1996. This implied that in 1996 alone, the more external revenue and/or the more own-source revenue in a municipality was directly related to the size of the subsidized regime. In 1997, external revenue and own-source revenue remained positive but were not longer significant.

Population size was a positive, significant determinant of subsidized population size for both years. This implied that larger municipalities had more of their populations classified under the subsidized regime.

In 1997, the percent living in urban areas was a negative, significant determinant of number subsidized. This implied that the more urban the municipality, the smaller the size of the subsidized population. The higher percent of unmet basic necessities (INBI) in the municipality, the larger the subsidized regime for 1997 only. The variable for municipality classification, which measured whether a municipality was rich or poor, was a positive, significant determinant of number subsidized in 1996 and then became negative and significant in 1997. This implied that at first rich municipalities had larger numbers of subsidized. By 1997, however, poor municipalities had larger numbers of subsidized.

HUMAN RESOURCE DECISION REGRESSION

In order to examine the determinants of different types of human resources within health care facilities, we used two different regression models shown in tables 61 and 62. In the first model, the total number of administrative personnel (including both contract and civil) as a portion of the total number of all types of personnel (administrative and clinical) was regressed with the same independent variables used in the previous regression. In the second model, we regressed the total number of contract workers (both administrative and civil) in proportion to the total number of all types of personnel. The R-square values for all the regression were low, due to the low number of municipalities reporting human resource information.

Regression #12. Administrative Personnel (AP)/Total Personnel (TP)

Table 61. OLS for Administrative Personnel/Total Human Resources, 1994 - 1997

MODEL #1	1994 (N=539)		1995 (N=544)		1996 (N=564)		1997 (N=566)	
Independent Variables	β-Coeff.	Z	β-Coeff.	Z	β-Coeff.	Z	β-Coeff.	Z
Constant	.3510*	6.55	.31805*	6.11	.2656*	7.69	.36622*	4.40
Municipality Certificat'n	.06122	0.86	.06205	0.49	.0091	0.55	.00007	0.007
Department Certification	.14034*	7.08	.1847*	4.26	-.0129	-0.64	-.0120	-0.93
Months Dept certified	-.0114*	-5.54	-.00656*	-2.77	.0008*	2.03	.0002	0.65
Months Mun certified	.00202	0.31	-.00106	-0.18	.0007	1.00	.0012**	1.87
External resources	-.00582	-1.28	-.00449	-0.90	.0026	0.94	-.00617	-0.93
Own resources	.0072*	3.60	.009338	3.86	.0022*	2.97	.00713*	2.76
Managed Care	----	----	----	----	-.000001	-1.17	-.00003	-0.93
Population	-.00003	-0.32	-.0001	-0.99	.0005	0.94	.0004	0.74
% Urban	.0432**	1.61	.02639	1.05	.0259	1.24	.0555*	2.64
R^2	0.1501	----	0.1500	----	0.0931	----	0.0930	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

Municipality certification was not a significant determinant of number of administrative personnel working in health care facilities. Department certification was positive and significant in 1994 and 1995, implying that during these years municipalities under the jurisdiction of certified departments hired more administrative personnel in proportion to total personnel than municipalities under the jurisdiction of non-certified departments.

Length the municipality was certified was only significant in 1997. During this year it was a positive determinant of administrative personnel. Length of department certification, was a negative, significant determinant of administrative personnel in 1994 and 1995 and then became a negative and significant determinant in 1996. This implied that those municipalities under the jurisdiction of longer certified departments at first hired less administrative personnel and then by 1996 were higher more administrative personnel in proportion to total personnel.

The more revenue in the municipality, the more administrative personnel hired. Interestingly, the more external revenue in the municipality, the less administrative personnel hired while the more own revenue in the municipality, the more administrative personnel hired.

Size of the municipality was only slightly significant with administrative personnel. Percent living in urban areas was a positive, significant determinant of the total number of

administrative personnel for three out of the four years. Those municipalities with more persons living in urban areas hired more administrative personnel than their rural counterparts.

The number of persons from the subsidized regime enrolled in the national health insurance program and covered through EPS services was not significant with the number of contract personnel hired in each municipality.

Regression #13. Contract Personnel (CP)/Total Personnel (TP)

Table 62. OLS for Contract Personnel/ Total Personnel, 1994 - 1997

MODEL #1	1994 (N=251)		1995 (N=291)		1996 (N=396)		1997 (N=429)	
Independent Variables	β-Coeff.	Z	β-Coeff.	Z	β-Coeff.	Z	β-Coeff.	Z
Constant	.6456*	5.88	.2109**	-1.77	.79528	5.11	.92846*	6.17
Municipality Certificat'n	-.0543**	-1.84	-.0745**	-1.77	.0763*	2.31	.0630*	2.59
Department Certification	.0491*	2.13	.05943	1.16	.02544	0.99	.0499*	2.32
Months Dept certified	-.0084*	-3.03	-.00075	-0.27	-.0013**	-1.59	-.0030*	-3.70
Months Mun certified	.0095*	2.42	.00421**	1.77	-.00313*	-2.55	-.0003	-0.24
External resources	-.04825*	-5.79	-.0129**	-1.62	-.05553*	-4.19	-.0639*	-5.33
Own resources	.0038**	1.53	.00491**	1.70	.00562**	1.63	.0066*	2.43
Managed Care	----	----	----	----	.0000004	0.22	.000009	1.41
Population	-.00003	-0.21	-.0003**	-1.51	.0002	0.19	-.00083	-0.86
% Urban	.10163*	2.19	.01838	0.48	.1016*	2.75	.1183*	3.01
R^2	0.1621	----	0.0823	----	0.0959	----	0.1306	----

* $|z| > 2.00$ ** $1.5 < |z| < 2.00$

Municipality certification was a negative, significant determinant of the number of contract personnel in 1994 and 1995, changing to positive and significant in 1996 and 1997. This trend implied that certified municipalities at first hired less contract workers but by 1996 and 1997 were hiring more contract workers than non-certified municipalities. Department certification was positive all four years, but only significant in 1994 and 1997. This implied that municipalities under the jurisdiction of certified departments were more likely to hire contract worker than those municipalities under the jurisdiction of non-certified departments.

Length of municipality certification, like municipality certification, changed sign from 1995 to 1996. In 1995, length of municipality certification was a positive, slightly significant determinant of number of contract workers. In 1996, however, it was negative and significant. Something happened in 1996 causing those municipalities who had been certified for a longer period of time to hire more contract workers than before. Length of department certification was a negative, significant determinant of number of contract workers, implying that those municipalities under the jurisdiction of longer certified departments were more less likely to hire contract workers than those municipalities under the jurisdiction of departments certified for less time.

External revenue was a negative, significant determinant of contract personnel. Those municipalities with more external revenue hired less contract workers. On the other hand, those municipalites with more own-source revenue (a positive, significant determinant of contract personnel) hired more contract personnel.

Size of the municipality was not highly significant. Percent living in urban areas was a positive, significant determinant of number of contract personnel. Those municipalities with more persons living in urban areas were more likely to hire contract workers.

The number of persons from the subsidized regime enrolled in the national health insurance program and covered through EPS services was not significant with the number of contract personnel hired in each municipality.

CASE STUDIES

The Methodology

Due to the time limits on this study, we did not have sufficient time to conduct any qualitative data analysis and/or case studies in Colombia. Francisco José Yepes Luján along with a Colombian team from La Asociación Colombiana de la Salud (ASALUD), conducted a small case study similar to one we might have organized. A brief summary of Yepes's study, the main findings, and limitations are reported below.

The main aim of Yepes's study "La Decentralización de la Salud en Colombia" was to better understand the dynamics, achievements, and difficulties of the health care decentralization process from the viewpoint of selected key informants from the municipality. He and his team examined decentralization through:

1. Exploring the differences between certified and non-certified municipalities in terms of health care organization, administration, financing, and community organization;
2. Documenting any differences between certified and non-certified municipalities in terms of insurance coverage, structural satisfaction quality, access to services, and equity; and
3. Investigating the opinions of local actors about decentralization and about the social security laws related to health.

Yepes's study was a multidisciplinary, exploratory study with a combined methodology of epidemiology and ethnography. It was both a case control study and an ethnographic report. The cases were the certified municipalities and the controls were the non-certified municipalities. Additional secondary information was collected from the Ministry of Health, the National Planning Department, National Statistics Department, and the National Health Superintendencia.

Key informants from each municipality were selected and interviewed. The key informants included administrative personnel (the mayor and person in control of the identification system for subsidiary beneficiaries called SISBEN); council members (three council members from each municipality that were interested in health and had differing view points); ombudsman (usually a lawyer who worked in defense of the community and was selected by the council members); members of health related social organizations (the Empresas Sociales del Estado's "junta directiva", health committees, watch groups, and Empresas Solidarias de Salud workers); and members of the Public Health Service Network (Hospital and ESS Directors and official statisticians).

The instruments used in data collection were a Qualification CheckList, a semi-structured interview guide for the key informants, a basic matrix of production and human resource information, and the daily notes from the field. More details on each instrument may be obtained from the authors of this report.

The data was collected over a period of 12 months. This was a longer period of time than expected due to the armed conflict that was occurring simultaneously with the election campaign in certain study areas. At certain times, the data collection was stopped due to the

risk involved in staying in the area when the conflict between the armed groups and those involved in the political campaign escalated to intense levels.

The informative questionnaires were analyzed using The Ethnograph Program version 4.0. The qualitative data was analyzed using Excel and SPSS.

The results of the study were based upon the information gathered in 22 municipalities. The findings were significant in that they reinforced observations from other studies and other municipalities, but were not significant within the study itself.

The Findings

A bivariate analysis was done on all variables. Those with p-values of less than 0.25 were analyzed together in multivariate logistic regression model. The bivariate analysis revealed that non-certified municipalities were more likely to have financial support from the municipality ($p=0.1912$), and that certified municipalities were more likely to have had a convocation by the mayor for their ARS ($p=0.1909$), have had their citizens grouped according to SISBEN ($p=0.2147$), and to have watch committees (0.7777). The multivariate logistic regression showed no significant results.

A descriptive, narrative analysis was used to summarize the information from the key informant interviews. Three key points were noted.

1. Both certified and non-certified municipalities had begun to address the issue of health care, according to their own needs. Primary care health facilities were assuming more municipal responsibilities with the cooperation of local personnel. Local citizens had more opportunities to be involved in health care through various committees, local watch groups, and alliances. The role of the hospitals in the communities was notable throughout the interviews.
2. There were notable areas of concordance and conflict between different key actors. The Municipal secretaries of health tended to form alliances with the local ESSs while the communities formed alliances with the local public hospitals (ESEs). Areas of conflict were between the Secretaries and the ESEs.
3. There were a number of criticisms about SISBEN in terms the process of selecting subsidized beneficiaries.

The positive aspects noted about decentralization were the following:

1. Both certified and non-certified municipalities had fulfilled the majority of the requirements of certification.
2. Decentralization was viewed as positive, especially in terms of giving the municipality more autonomy in making their own decisions.
3. There were more persons involved in health care now than prior to decentralization including the Secretary of Health, Personnel, Councilors, Vigilants, Patient Associations and Alliances, and "Juntas Directivas" for ESEs and ESSs. The mayor had begun to assume more responsibility for health care and make a greater effort to incorporate health care issues into the municipality's agenda. In some municipalities, it was the mayor who had actually helped the municipality become certified, often times against the will of the department.
4. More effective decisions for the municipalities were being made.
5. There was a notable increase in the number of services available at the municipal level.

6. There was an overall increase in the number of insured persons, both in the subsidized and contributory regimes.

A few other positive observations:

1. Overall health service had improved.
2. Municipal health care organizations and council groups, separate from those associated with the hospitals, had begun to function; although they still lacked proper infrastructure, human resources, and finances.
3. There was an increase in administrative training, but only for professional administrators.
4. There was notable horizontal municipal, technical cooperation.
5. The ESSs were a positive addition to municipalities with their added administrative infrastructure, qualified personnel, and computer experts. The ESSs brought qualities to the municipality not normally seen in institutions at the municipal level. The participation of different interest groups, such as Juntas Directivas, citizen groups, and patient associations, only reinforced the ESSs' role in the municipality.

Despite these many positive comments about decentralization, there were a number of problematic areas and alternative ideas.

1. Although the health care system had improved, it was still very fragile and might suffer setbacks at anytime due either a lack of a solid local social structure or a lack of administrative support.
2. The system of resource assignment was too complex and lacked transparency.
3. More local development of information systems was needed.
4. Training should be directed not only at the professional level, but at all levels.
5. Central forces still had an influence the EPSs and the ARS.
6. In terms of billing there were two visible problems. One, the workers felt that in having to charge everyone in order to survive economically they were dehumanizing the practice of medicine. Second, they felt that there were too many accounts disregarded due to a lack of credible criteria.

The Limitations

As this study was a case control, had a small sample size, and was not based on a representative sample, the findings were not generalizable to the whole country. The municipalities were selected from the similar, more developed departments (Antioquia, Valle, Caldas, Risaralda) located the same area of Colombia. No municipalities were included from the Atlantic coast or the central region and only two municipalities were included from the northeast and two from the southeast.

While the qualitative information was informative, the information systems in the interviewed areas were not sufficient enough to provide additional information on the level of health, consumption, and/or production figures; figures that would have helped produce more reliable results. The figures that were collected on population, level of poverty, and insurance coverage were also deficient, limiting the analysis.

There was a certain amount of "contamination" of the non-certified municipalities. Originating from the same area and/or department as the certified municipalities, there may

have been a sharing of information allowing the non-certified municipalities to take on certain qualities of the certified municipalities.

With such a small total number of municipalities, a logistic regression should not have been attempted. Instead, a simple comparative analysis using percentage of cases and controls with certain qualities would have been more appropriate.

More should have been investigated in terms of spending information from hospitals and municipalities. The authors clearly expressed the key informants' feelings and emotions about decentralization, but could not gather reliable information on health expenditures, hospital management, and/or efficiency of health care delivery.

Yepes along with the other principal investigator and research associate of the study described above, conducted a second study with more specific objectives, examining in more detail the process of decentralization in three Colombian municipalities. The five, specific objective of the study were to examine the strengths, weaknesses, and potential areas of resistance to change in health reform in relation to:

1. The municipal administration (mayor, council, and personnel);
2. The Health Care Organizations;
3. Community Organizations;
4. The level of coverage and access to health care services; and
5. The system of receiving financial resources from the department and/or the central level.

The authors carried out this study in three municipalities from different areas than the former study. The three municipalities were chosen for their "success" in the area of decentralization and health reform. All three municipalities had been certified by the end of the study period. They used both the semi-structured interview guide for key informants and the checklist from their previous study (the checklist was adapted into a slightly different form) along with field notes. In this second study, Yepes also conducted a workshop on devolution of health care with administrators, councilors, secretaries of health, and community representatives. Results and comments from the workshop were used in the report.

Many of the same themes arose among the "Three Case Study" as did in the previous study. Some other interesting comments were:

1. Along with the creation of the new position of Secretary of Health, a local health care fund, and ESE hospitals, all three municipalities seemed to undergo an "aging" process. Through this process, they learned about the administrative and financial autonomy needed to invest correctly in local necessities to improve health care services.
2. In all three municipalities the key informants reported an improvement in health care services and in the local health network. They also noted a decrease in the need to travel to receive health care (although referrals were still needed for secondary and tertiary care).
3. Local citizen participation was an important factor in the process of health care reform and decentralization. The Watch Committees were noted as important and needed continual support and promotion.

Many of the same negative comments found in the previous study were reiterated in this second study:

1. There was confusion and a lack of consistency and control in terms of municipal *Situado Fiscal*, FOSYGA, other budgeted allocations, EPS-ARS payment mechanisms, and the rules for the contributory regime, the subsidized regime, and the "vinculados." The system needed to be simplified. There was a lack of training, information, education, technical assistance, and resources at the municipality level.

Even after decentralization there was still little presence from the MOH, the departments, the universities, and NGOs at the municipal level. The MOH needed to promote the Territorial Committees for the Social Security in Health that was laid out in the law 100.

CONCLUSIONS

The data analysis above allows us to make the following conclusions.

ALLOCATION DECISIONS

Allocation decisions were analyzed in terms of total health expenditure, per capita health expenditure and own-source health care expenditure as shown in the Table 64.

Table 64. Summary of Allocation Decision Making Regression Analysis

Allocation Decisions	THE/TGE	THE/capita	TOHE/TOGE	TOHE/capita	Fiscal Laziness
Certified Departments	+	-	+	-	-
Certified Municipalities	-	-	-----	-----	-
High External Revenue	+	+	+	-	-----
High Own-Source Revenue	+	+	+	+	-----
Rural	+	+	+	+	+
Smaller	+	-----	+	-----	-

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

Effects of Certification

We found that the direct certification of municipalities resulted in *lower* total health expenditures and *lower* total expenditures per capita. It also however, resulted in *less* tendency toward fiscal laziness. In other words, certified municipalities may have allocated less to health but they did not substitute central resources for their own source funding.

However, we found that municipalities in departments, which were certified, tended to *increase* their total health expenditures, *increase* their own source contributions and to be *less* fiscally lazy.

These somewhat contradictory results may suggest that certification is not a clear indicator of significant changes in municipal decision space and that the relationship between departmental and municipal governments may be more complex than we have been able to capture in our analysis. We might conclude from this analysis that the expansion of decision space implied by certification did not alone have much of an effect on allocation and performance.[8]

[8] This result may be due to the "informal decision space" in a country where the central government is not as effective in enforcing its rules as say Chile. Municipalities that are not certified may have been granted more authority and control over their *Situado Fiscal* by their departments, and municipalities that were certified may have been more restricted by their departments. However we have no means of measuring this effect.

Effects of municipal income

Municipalities with both higher external revenues (intergovernmental transfers) and own-source income, had higher levels of total health expenditure in almost all regressions. Central government transfers were significantly unequal early on in 1994 and 1995, with a new transfer system that incorporated little local choice. Transfers became more uniform in 1996 and 1997.

As we have found elsewhere, wealthier municipalities tend to spend more on health care. In Colombia they have received more from central government and they also contribute more of their own revenue. However, this general tendency is declining over time, allowing poorer municipalities to "catch up."

Rural Municipalities

Rural municipalities allocated more to health in terms of all allocation decisions. This may be due to the fact that a minimum absolute allocation may be necessary to maintain basic health services especially in rural areas. This minimum may be higher per capita in rural areas than in urban municipalities that are likely to have larger populations using each facility.

Fiscal Laziness

We examined fiscal laziness in order to determine if intergovernmental transfers from the central government would provide a disincentive for local governments to collect local revenues or would push local resources out of the sector that the center was funding. We referred to this concept as “fiscal laziness”. Through the regression analysis we assessed whether the increase in decision space which accompanied certification was related to fiscal laziness. A positive sign signified more fiscal laziness within municipalities; a negative sign less fiscal laziness. The finding suggest that the increased decision space that came with certification did not result in fiscal laziness, on the contrary. Increased local contributions and inter-governmental transfers were associated with less fiscal laziness. Only rural municipalities had the tendency to be more fiscally lazy.

ALLOCATIONS WITHIN THE HEALTH SECTOR

Promotion and Prevention

Table 65. Summary of Allocation Decisions within the Health Sector Regression Analysis

Allocation Decisions	PPE	PPE/capita
Certified Departments	-	-
Certified Municipalities	------	+
High External Revenue	-	-
High Own-Source Revenue	-	+
Rural	-	+
Smaller	+	-----

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

We investigated allocations to promotion and prevention in terms of decentralization in order to see if local authorities would prefer to allocate funds to clinical curative services for ill individuals and not toward major public health efforts – maternal and child health, immunizations, family planning, etc. With the regression above we were able to assess the allocations to different types of services.

As seen above in the summary table, the regression analysis showed that total spending on promotion and prevention was actually larger in those municipalities under the jurisdiction of non-certified departments, for those municipalities with lower external revenue (less intergovernmental transfers), for those municipalities with less own-source income, and for smaller municipalities. Rural municipalities allocated less to total promotion and prevention activities.

Per capita expenditure for promotion and prevention followed a slightly different pattern. Per capita expenditure on promotion and prevention was larger in certified municipalities, those municipalities under the jurisdiction of non-certified departments, municipalities with more own-source income, municipalities with less intergovernmental transfers, and more rural municipalities.

PERFORMANCE AND LOCAL CONDITIONS

Equity

Table 66. Summary of Equity Distribution between the Richest and Poorest Municipalities

Ratios richest to poorest	1994	1995	1996	1997
Intergovermental transfers	6.11	5.38	2.35	1.18
Own-source Income	41.5	70.0	23.55	11.9
THE/TGE	2.37	2.68	1.74	1.25
TOHE/TOGE	1.00	1.79	1.52	1.03
THE per capita	8.36	8.53	3.68	3.37
TOHE per capita	5.78	5.00	4.31	3.82

One of the major areas of interest for our analysis was that of the different performance indicator, especially equity. We were unable to run any regressions on equity alone, however we could use per capita health expenditure for municipal population and income deciles for our analysis. In order to make this assessment we used per capita central government transfers (external transfers) and own-source income (see Tables 24 and 25 above). Central government transfers were assigned by the central level according to a flexible formula based on per capita figures and not influenced by local choice. From the tables above, we saw that in the first few years of decentralization, the allocations from the central government based on this formula were not uniform. In 1994, central allocation for the richest municipalities were six times that of the poorest municipalities. This inequality was even worse in terms of own-source income. The richest municipalities raised 42 times more from their own sources than the poorest municipalities in 1994 and 70 times more in 1995. By 1996 and 1997, central government transfers had equalized over all municipalities, although still not progressively compensating the poor. The gap between the wealthiest and poorest municipalities decreased to 2.35 in 1996 and 1.18 in 1997. Also, the gap in own-source contributions to allocations between the wealthiest and the poorest municipalities narrowed to 23.55 in 1996 and 11.90 in 1997.

We found similar trends in the analysis of how much of its own source revenues a municipality would allocate to health. The allocation of own-source income to health was relatively high—between 40 and 60% in 1997 (see tables 33 and 34). The richest municipalities allocated the most to health care in terms of general expenditures. However the range between richest and poorest municipalities diminished over the years. In 1994, the richest municipalities had a ratio of 2.37 times that of the poorest municipalities. In 1997, the ratio between the rich and the poor was 1.25 times.

In terms of total own source spending on health per capita, there was also a general equalizing effect over the four years. The gap between the richest and poorest municipalities decreased from 5.78 in 1994 to 3.82 in 1997.

Utilization of Health Care Services

Table 67. Summary of Utilization Regression Analysis

ALLOCATION DECISIONS	UTIL/CAPITA
Certified Departments	-
Certified Municipalities	- (1996)
High External Revenue	-
High Own-Source Revenue	+
Rural	+
Smaller	+

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

Looking at utilization rates per capita was the next step in terms of analyzing equity and performance. With this indicator, we hoped to measure how health expenditures were translated into availability of services to the general population. Using the amount of total general services rendered in all health care facilities in each municipality.[9] Utilization increased over time and was positively related (although not for all years) to more own-source income, rurality, and smaller municipalities. Revenue from central intergovernmental transfers was a negative determinant for increased utilization per capita for certain years. In 1994 and 1997, the greater the transfer, the less utilization. While it makes sense that increases in own source expenditures for certain years would result in greater utilization during those years since the local population may want to get its money's worth, it is not fully clear why increases of external funding (for certain years) would lead to lower utilization.

As was mentioned above, examining the effects of increased decision space we found that municipal certification was significant but negatively related to utilization for 1994 and 1996. This might be explained by the fact that municipal certification was a new process in 1994 and that there was a significant increase in numbers of certified municipalities in 1996. The Yepes case studies found a general impression among local stakeholders that more services were available in certified municipalities.

Efficiency

Table 68. Summary of Efficiency Regression Analysis

ALLOCATION DECISIONS	EFFICIENCY
Certified Departments	-----
Certified Municipalities	-----
High External Revenue	-
High Own-Source Revenue	-
Rural	-----
Smaller	+

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

[9] The concept "general services" includes both inpatient and outpatient visits since Colombian hospitals do not keep a record of the type of visit.

We examined efficiency to see if the argument that decentralization may allow local managers more flexibility to make decisions that would increase efficiency in the use of health resources was true. Our variables helped to determine what might explain variations in municipal level efficiency.

For economists, technical (or productive) efficiency requires maximizing the product obtained based on a given set of resources (inputs), or alternatively, minimizing the production costs of a given quantity of units of the good or service being proffered. A crude measure of the efficiency of municipal primary health care management is the ratio between health activities (outputs) and the level of spending (inputs), assuming uniform quality and input costs.

In Colombia, we defined technical efficiency as the amount spent in pesos per unit of health care provided. The more spent per unit of health care the less efficient the municipality. The regression analysis found that higher spending of external resources for all years and higher levels of own source resources for 1994 and 1995 was associated with lower efficiency, as might be expected unless management made significant changes in human resources and services. The effect of municipal certification was significant only in 1996 where its effect was to improve efficiency. These findings should be taken with caution since the unit of health care provided includes both outpatient and inpatient utilization since municipalities in Colombia are responsible for first level hospitals.

FOSYGA

Table 69. Summary of FOSYGA Regression Analysis

ALLOCATION DECISIONS	FOSYGA
Certified Departments	-----
Certified Municipalities	+
High External Revenue	-
High Own-Source Revenue	-
Rural	-----
Smaller	+

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

FOSYGA was the surplus collected by EPSs from the risk-adjusted capitation rate for each beneficiary enrolled in the contributory regime. The FOSYGA was granted to municipalities based on the number of "affiliados" or residents they had enrolled in the subsidized national health insurance program. FOSYGA was allocated directly to certified municipalities and indirectly, through the department, to non-certified municipalities. It makes sense then, that we found in our regression analysis that certified municipalities had more FOSYGA funding than non-certified municipalities. Increasing decision space in terms of a municipality's poor population may have powerful, positive results. The more intergovernmental transfers and/or own-source income was not a positive predictor for increased FOSYGA funding. Smaller municipalities, probably those with poorer populations, received more FOSYGA funding.

SISBEN.

Table 70. Summary of SISBEN Regression Analysis

ALLOCATION DECISIONS	SISBEN
Certified Departments	-
Certified Municipalities	+
High External Revenue	+
High Own-Source Revenue	+
Rural	+
Smaller	-

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

The number of persons who qualify under the subsidized regime were selected using a system called SISBEN (Beneficiary Identification System). Under SISBEN, subsidiaries were selected according to the answers for special form given to those houses that classify as poverty levels I, II, or III. Increased decision space though certification was positively related to registered subsidized inhabitants as certified municipalities were a positive determinant of SISBEN. Those municipalities under the jurisdiction of non-certified departments had more decision space in terms of SISBEN, as these municipalities were the ones who had higher numbers of registered inhabitants in the subsidized regime. Both intergovernmental transfers and own-source income was positively related to subsidized populations. More income from these sources increased a municipality's ability to provide for their poorer populations. Rural municipalities had more subsidized person while smaller municipalities actually had less.

HUMAN RESOURCE DECISIONS

Table 71. Summary of Human Resource Regression Analysis

ALLOCATION DECISIONS	AP/TP	CP/TP
Certified Departments	+	+
Certified Municipalities	-----	+
High External Revenue	+	-
High Own-Source Revenue	+	+
Rural	-	-----
Smaller	-----	+

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

We investigated the determinants for human resources because local governments in Colombia were given some range of choice over human resource decisions. As mentioned above, data on human resources however was limited in Colombia but sufficient to examine some of the issues. We had information on the ratios of administrators to providers.

In Colombia we were able to compare the number of clinical and administrative hours available in municipalities. Furthermore we assessed the proportion which were under civil service rules and therefore less subject to local management control and those which were contracted by the local authorities. The data showed that the portion of human resources on contact was low but increasing for both administrative and clinical staff. While the poorer

municipalities were more likely to hire contract staff than the richer municipalities, this difference was declining over time. The regression analysis showed that municipal certification did not affect the hiring of administrative personnel. However, it was significant in determining the proportion of contract to civil service staff. Certified municipalities during the first two years (1994-5) hired less contract staff than did non-certified municipalities, but after the large increase in certification, those that were certified hired more contract workers than did non-certified municipalities. Furthermore, those municipalities that had been certified longer were more likely to hire contract workers. We also found that those municipalities that put more of their own source revenue into health tended to hire more contract workers. Overall certification seemed to be related to hiring contract workers something we might expect if certification means municipalities exercise more management control.

OTHER IMPORTANT REGRESSION OBSERVATIONS

Table 72. Regression Effect on Length of Department and Municipality Certification

	LONGER CERTIFIED DEPARTMENTS	LONGER CERTIFIED MUNICIPALITIES
THE/TGE	-	-----
THE/capita	-	-----
TOHE/TOGE	-	-----
TOHE/capita	+	-----
Laziness	-	-
PPE	-	+
PPE/cap	+	+
Util/cap	-	+
Efficiency	-	+
FOSYGA	-----	+
AP/TP	-	-----
CP/TP	-	-

(+) = increased allocation or effect in specified area
(-) = decreased allocation or effect in specified area
—— = null effect, insignificant

Length of Department and Municipality Certification

While the fact of department certification had a positive relation to most of our dependent variables, our study showed that as the length of time a department was certified was negatively related to our dependent variables in eight regression models. The effect was most strongly seen in 1996, the year the length of department certification usually became significant for the first time. Municipalities under the jurisdiction of longer certified departments allocated less of their total health expenditure, had lower total health expenditures per capita, spent less of their own-source health expenditure, had lower utilization rates (not significant), had lower promotion and prevention expenditures (not significant), hired less administrative personnel and less contract workers. The only positive effect of length of department certification was that municipalities were less lazy. Length of department certification was insignificant in the FOSYGA regression.

Age of municipality certification was an important determinant in different areas than age of department certification. Age of municipality certification was a positive and significant

determinant in terms of utilization of health care services, spending on promotion and prevention, fiscal laziness, efficiency, and FOSYGA. Unlike the municipalities under the jurisdiction of longer certified departments, longer certified municipalities spent more on promotion and prevention, had higher utilization rates, and received more FOSYGA funding. Similar to municipalities under the jurisdiction of longer certified departments, longer certified municipalities were less lazy. The longer the municipality was certified the more efficient it became. Our results showed insignificant results in terms of administrative personnel and negative results in terms of contract workers.

ANNEX A. PANEL MODEL ANALYSIS

The same regression equations above were estimated using a panel data technique called Random Effects. This type of panel technique controls for the existence of unobserved or unmeasurable characteristics of municipalities that effect the dependent variable in question (see regressions below) assuming that these characteristics are constant over time. Such characteristics of our sample that may not vary over time are the quality of public institutions, the education and demographic composition of population, the distribution of income, the quality of public infrastructure, etc. The random effects technique models these unobservable and time-invariant characteristics as error terms that vary across the municipalities but are constant over time with in the municipalities.

As in the regressions above, the models were described using β-coefficients and z-scores. β-coefficient measured the magnitude of effect of the independent variable on the dependent variable. The z-score told us whether the magnitude, as stated by the β-coefficient, was statistically significant from zero. The z-score was calculated by dividing the β-coefficient by the standard error of the variable. A β-coefficient with one asterisk was highly significant in the model, having a z-score greater than or equal to 2.0. A β-coefficient with two asterisks was only moderately significant, having a z-score of 1.5 to 2.0.

ALLOCATION DECISIONS

The following five panel regressions investigate if there is any significant impact on allocation to health over time. The regression look at the proportion allocated to health in terms of total allocations, the proportion allocated to health from the municipalities own-sources in terms of total allocations in general from the municipalities own resources, per capita expenditures to health, and fiscal laziness.

Table 73 shows the results of the panel model for the dependent variable "THE/TGE".

Table 73. Random Effects Panel Model for THE/TGE for 1994-1997

DEPENDENT VARIABLES	THE/TGE	
TOTAL N	N = 3808	
Independent Variables	Coeff.	Z
Municipality Certification	-0.017	-1.294
Department Certification	0.023*	2.418
Months Dept certified	-0.002*	-5.091
Months Mun certified	0.0002	0.209
External resources	0.025*	36.32
Own resources	0.023*	53.89
Population	-0.0006*	-3.87
% Urban	-0.060*	-4.63
Constant	0.066*	7.19

* $|z| > 2.00$ ** $1.5 < |z| < 2.0$

Regression #2. Total Health Expenditure per Capita (THE/capita)

Table 74 shows the results of the panel regression shows the results for THE per capita.

Table 74. Random Effects Panel Model for THE per capita for years 1994-1997

Dependent Variables	THE per capita	
Total N	N=4168	
Independent Variables	Coeff.	Z
Municipality Certification	1.94058	0.876
Department Certification	-13.13528*	-8.054
Months Dept certified	.4505113*	6.017
Months Mun certified	.461003*	3.434
External resources	1.694922*	19.471
Own resources	2.142865*	30.526
Population	-----	-----
% Urban	-7.276847*	-3.383
Constant	6.085268*	4.899

* |z| >2.00 ** 1.5< |z| <2.0

Regression #3. Total Own-Source Health Expenditure

Table 75 shows the results of the panel model for TOHE/TOGE.

Table 75. Random Effects Panel Model for TOHE/TOGE for years 1994-1997

Dependent Variables	TOHE/TOGE	
Total N	N=2523	
Independent Variables	Coeff.	Z
Municipality Certification	0.014762	1.28
Department Certification	0.039709*	4.00
Months Dept certified	-0.00043	-0.94
Months Mun certified	-0.00060	-0.80
External resources	0.023783*	5.80
Own resources	0.044907*	36.32
Population	-0.00175*	-6.03
% Urban	-0.10841*	-4.03
Constant	0.070061	0.90

* |z| >2.00 ** 1.5< |z| <2.0

Regression #4. Total Own Source Health Expenditure per Capita

Table 76 shows the results of the panel model for TOHE per capita.

Table 76. Random Effects Panel Model for TOHE per capita for years 1994-1997

Dependent Variables	TOHE/TOGE	
Total N	N=2400	
Independent Variables	Coeff.	Z
Municipality Certification	.8327114	1.067
Department Certification	-1.994022*	-3.417
Months Dept certified	.1866976*	7.571
Months Mun certified	.0594857	1.394
External resources	.8802625*	5.521
Own resources	3.351645*	26.123
Population	-----	-----
% Urban	-8.755698*	-9.506
Constant	-38.0727*	-18.808

* |z| >2.00 ** 1.5<|z| <2.0

Increasing decision space through municipality certification was not a significant determinant for any positive allocation decisions. Whether the municipality was certified or not, did not seem to effect how much was allocated to health care in terms of health care allocations in general or allocations per capita. A similar pattern was seen above in the yearly, OLS allocation decision regressions. The only year that showed any significance in any of the allocation decision regressions was 1996 (significant and negative), the year when most municipalities were certified. This implied that an increasing decision space through municipality certification caused an immediate decrease in positive allocation decision making for these municipalities.

Department certification was significant in all the allocation regressions. Department certification was a positive determinant in terms of the proportion allocated to health care in terms of total general allocations. Department certification was a negative determinant for allocation decisions related to expenditures per capita. This implied that those municipalities under the jurisdiction of certified departments allocated more to health in terms of allocations to all other areas such as education, sports, and recreation. However, the same municipalities under the jurisdiction of certified departments, also had lower health care expenditure per capita than those municipalities under non-certified departments. Funding for health in terms of total spending may seem to be increasing however, this positive trend may actually be disguised by the fact that expenditures per beneficiary have not increased. Decentralization seems to have had an effect on total health care spending, however the effect has not reached the individual level as yet. This pattern mimicked most strongly the individual, OLS allocation decision regressions for the years 1996 and 1997, when decentralization had had time to take effect.

External funding from the government and own-source funding from the municipality itself were both positive predictors for allocation decisions in terms of proportion allocated to health and per capita. Over time as governmental transfers increased and own-source income increased, the municipality was able to allocate more to health care and more to health care per capita. The same pattern was seen in the individual, OLS regressions. The only difference was in the TOHE per capita regression, where in the OLS governmental transfers were negative predictors for this dependent variable. In the panel TOHE per capita regression governmental transfers were significant and positive.

In general, the smaller the municipality the more they allocated to health in proportion to general allocations. More rural municipalities had higher proportions of health care expenditures, but also higher per capita expenditure in health. Smaller municipalities and more rural municipalities made better allocation decisions. The same results were seen in the OLS, yearly regressions above.

Regression #5. Fiscal Laziness

Table 77 presents the results for the last allocation decision regression for fiscal laziness. The panel results for fiscal laziness, although part of allocation decisions, are reported separately from the four regressions above as the results follow a different trend.

Table 77. Random Effects Panel Model for Fiscal Laziness for 1994 - 1997

Dependent Variables	Fiscal Laziness	
Total N	N=3905	
Independent Variables	Coeff.	Z
Municipality Certification	-0.0121*	-1.01
Department Certification	-0.1249*	-12.4
Months Dept certified	-0.0028*	-6.03
Months Mun certified	-0.0031*	-3.61
External resources	----	
Own resources	----	
Population	-0.0020*	-5.8
% Urban	-0.1257*	-5.46
Constant	0.88591*	45.24

* $|z| > 2.00$ ** $1.5 < |z| < 2.0$

Table 77 shows that all the independent variables were significant and negative with fiscal laziness over the years 1994-1997. Municipality certification and department certification were both negative determinants of fiscal laziness, implying that both those municipalities that were certified and/or those municipalities whose departments were certified were less lazy. On the same note, length of municipality certification and length of department certification were also both negative determinants of fiscal laziness. The longer the municipality was certified and/or the longer the department was certified the less lazy the municipality. This same trend was seen above in the individual OLS regressions, except that municipality certification was not related to less fiscal laziness until 1996 and 1997.

Population size and percent living in urban areas were both significant negative determinants of fiscal laziness. This trend implied that larger, more urban municipalities would be less lazy.

It was also worth noting that the constant in this panel regression was overwhelmingly large and positive. Such a large constant term implied that there was some inherent fiscal laziness imbedded in all municipalities. This being the case, even though the regression coefficients on each variable show less laziness, this was measured against an environment already biased toward fiscal laziness. There was no way of knowing if the effects of the regressions cancelled out the effects of the environment.

ALLOCATIONS WITH THE SECTOR

Regressions #6 and #7 attempt to look at allocation decisions within the health sector. Due to limitations on our data we could only analyze allocations to promotion and prevention within the health sector.

Regression #6. Promotion and Prevention in proportion to Total Health Expenditure

Table 78. Random Effects Panel Model for PPE/THE for all years

Dependent Variables	PPE/THE	
Total N	N=3284	
Independent Variables	Coeff.	Z
Municipality Certification	0.00617	0.48
Department Certification	-0.02930	-0.48
Months Dept certified	0.00053	1.16
Months Mun certified	0.00231*	2.87
External resources	-0.0284*	-11.3
Own resources	-0.0105*	-18.5
Population	0.00054*	2.98
% Urban	0.0295**	1.90
Constant	0.5801*	16.75

* |z| >2.00 ** 1.5<|z| <2.0

Regression #7. Promotion and Prevention per Capita

Table 79. Random Effects Panel Model for PPE per capita for years 1994-1997

Dependent Variables	THE per capita	
Total N	N=3284	
Independent Variables	Coeff.	Z
Municipality Certification	1.27*	3.641
Department Certification	-1.08*	-4.134
Months Dept certified	0.061*	5.236
Months Mun certified	0.155*	7.740
External resources	-0.098*	-5.402
Own resources	0.050*	4.359
Population	-----	-----
% Urban	-1.75*	-4.969
Constant	4.50*	18.591

* |z| >2.00 ** 1.5<|z| <2.0

In the overall panel model for PPE/THE there was no relationship between municipality certification and/or department certification and allocations to promotion and prevention in proportion to total health expenditure. However, both municipality certification and department certification were significant determinants of allocation to PPE per capita. Municipalities that were certified were more likely to have higher PPE expenditure per capita

than non-certified municipalities. At the same time, however, municipalities under the jurisdiction of certified departments allocated less to PPE per capita than municipalities under the jurisdiction of non-certified departments. Decentralization of the municipality is important in terms of allocation to promotion and prevention at the individual, while department certification is not. Overall expenditures to PPE were not effected by decentralization. This trend was seen above in the OLS regressions, however it mostly took effect in the years 1996 and 1997. For example, in the panel regression for PPE/THE there was no effect between department certification and allocations to PPE/THE. In the OLS regression, department certification was a negative determinant of PPE/THE in the years 1996 and 1997. This implied that something happened in these years, making those municipalities under the jurisdiction of non-certified departments allocate more to promotion and prevention, but the effect was not strong enough to be seen over all four years. In another example, municipality certification was only a positive, significant determinant of PPE per capita for the individual OLS regression for 1997, however this year must have had a large enough effect as the panel regression showed that municipality certification was a positive, significant determinant over all four years.

The length of municipality certification was a positive significant determinant of PPE/THE and PPE/capita. The longer a municipality was certified, the more they allocated to promotion and prevention in terms of total health care expenditures and the more they allocated to PPE per capita. Length of department certification was not a significant determinant of promotion and prevention, but was for allocations to promotion and prevention per capita. The effects of municipal decentralization are positive for both PPE/THE and PPE per capita. The effects of departmental decentralization are only positive for PPE per capita. The same effect was seen in the OLS regressions, especially for years 1996 and 1997.

External revenue (intergovernmental transfers) was a significant negative determinant of PPE/THE and PPE per capita, implying that those municipalities that received more intergovernmental transfers allocated less to promotion and prevention in terms of THE and had lower expenditures in promotion and prevention per capita. Own-source revenue (from municipal taxes and municipal fees, etc.) was a negative, significant determinant of PPE/THE and a positive, significant determinant of PPE per capita. This implied that the more own-source revenue generated by the municipality was important in terms of increased allocations to promotion and prevention per capita, but had a negative effect in terms of overall promotion and prevention expenditures. The same results were seen in the OLS regressions.

The only other significant determinants of promotion and prevention were population size and percent living in urban areas, both of which were positive for PPE/THE. This trend implied that larger, more urban municipalities allocated more to promotion and prevention in term of total health care spending. Similar results were seen for the OLS, yearly regression for PPE/THE.

In terms of allocation to promotion and prevention per capita, more rural municipalities had higher per capita allocations. The OLS regression for PPE per capita showed mimicked these results.

PERFORMANCE AND LOCAL CONDITIONS

Regression #8. Utilization of Health Care Services per capita

Table 80. Random Effects Panel Model for Util/capita for 1994 - 1997

Dependent Variables	Util/capita	
Total N	N=2406	
Independent Variables	Coeff.	Z
Municipality Certification	0.12110	0.34
Department Certification	0.17686	0.64
Months Dept certified	-0.00910	-0.73
Months Mun certified	-0.0162	-0.79
External resources	0.0256	0.73
Own resources	-0.07205	-0.36
Population	----	----
% Urban	-1.3446*	-2.79
Constant	2.7385	1.54

* |z| >2.00 ** 1.5< |z| <2.0

In the panel analysis, spanning the years 1994-1997, neither department certification or municipality certification were significant determinants of utilization of health care services over the four year period, 1994-1997. This was interesting since in the OLS regression for utilization per capita municipality certification and department certification were both negative, significant determinants for years 1994 and 1996. 1994 was the first year of decentralization and 1996 was the year when the most municipalities were certified. The increase in decision space during these years, for both municipalities and departments, was associated with lower utilization rates.

Neither external resources nor own resources were significant determinants of utilization of health care services. This phenomenon may be due to the low number of municipalities reporting utilization rates, because in the individual OLS regression, external revenue was a negative, significant determinant of utilization for years 1994 and 1997 and own-source resources was a positive, significant determinant for the same years. These individual, yearly results did not have an effect overall.

Percent living in urban areas was the only significant determinant of utilization of health care services per capita. The coefficient for percent living in urban areas was negative implying that the more urban the municipality, the lower the utilization of health care services per capita. The same trend was seen in the OLS regression.

Regression #9. Efficiency: Total Health Expenditure in proportion to Utilization of Health Care Services

Table 81. Random Effects Panel Model for Efficiency for 1994 - 1997

Dependent Variables	Efficiency	
Total N	N=2414	
Independent Variables	Coeff.	Z
Municipality Certification	50.186	0.180
Department Certification	-292.536	-1.379
Months Dept certified	-1.492	-0.167
Months Mun certified	-1.961	-0.123
External resources	1.90	0.069
Own resources	19.30	1.162
Population	-0.933	-0.318
% Urban	559.538**	1.761
Constant	-97.828	-0.308

* |z| >2.00 ** 1.5<|z| <2.0

The overall model for efficiency was weak, only explaining 3.8% of the variation. None of the independent variables except the percent living in urban areas were significant determinants of efficiency. This implied that the more urban the municipality the less efficient the municipality, spending more for each service rendered. Decentralization had little effect on efficiency. The OLS regressions for efficiency were weak also. The largest R-square was in 1994, but only explained 2.6% of the variation in the variables for that year.

Regression #8. FOSYGA

FOSYGA was the surplus collected by EPSs from the risk-adjusted capitation rate for each beneficiary enrolled in the contributory regime. This additional municipal revenue was to be used to help EPSs provide services to any person they enrolled from the subsidized regime. FOSYGA first appeared in municipal budgets in 1997. As only one year was used in the analysis the OLS model, not the panel model is shown below. Since we only had FOSYGA funding information for one year, a panel analysis could not be estimated. The description of the results for the OLS was given above.

Table 82. OLS for FOSYGA for 1994 - 1997

MODEL #1	1997 (N=1030)	
Independent Variables	β-Coeff.	Z
Constant	-2915.28*	-12.39
Municipality Certification	54.92**	1.84
Department Certification	-17.86	-0.61
Months Dept certified	-1.31	-1.03
Months Mun certified	6.29**	1.93
External resources	239.53*	13.42
Own resources	-12.62*	-7.99
Population	6.12*	3.27
% Urban	-11.62	-0.36
INBI	129.94*	2.73
Mun. Class.	77.527**	1.35
R-square	0.5894	----

* |z| >2.00 ** 1.5<|z| <2.00

Regression #11. SISBEN Classification

Table 83 shows the results of the panel model for SISBEN over the two years 1996 and 1997. We only used these two years in the analysis as the data was only available for these two years. SISBEN is the classification system used to decide how many beneficiaries qualify for the subsidiary regime. The higher the SISBEN figure, the more subsidiary beneficiaries in the municipality.

Table 83. Random Effects Panel Model for SISBEN for 1996 and 1997

Dependent Variables	SISBEN	
Total N	N=2075	
Independent Variables	Coeff.	Z
Municipality Certification	495.94	0.747
Department Certification	-934.84	-1.363
Months Dept certified	20.059	0.778
Months Mun certified	-2.65	-0.063
External resources	24.82	0.795
Own resources	26.82	0.875
Population	1012.98*	95.670
% Urban	-1552.30**	-1.761
Constant	2601.65*	5.093

* $|z| > 2.00$ ** $1.5 < |z| < 2.0$

Decentralization had little effect on the SISBEN value. Neither municipality certification nor departmental certification had an effect on the dependent variable. In 1997, the OLS regression showed that municipality certification was a positive, significant determinant for SISBEN. The results for this year did not make municipality certification significant in the panel regression. The same was true for department certification. Its 1996 value, negative and significant, was not strong enough to similarly effect the panel model outcome.

In the OLS regression for SISBEN, governmental transfers and own-source revenues were positive, significant determinants for SISBEN in 1996. These results did not carry over into the panel model.

The only independent variables that were significant determinants for a higher SISBEN value, in the panel model, were population size and urbanity. Larger municipalities had higher SISBEN values, hence more subsidized beneficiaries. More rural municipalities also had higher SISBEN values. Similar estimates were seen in the OLS regression.

HUMAN RESOURCES DECISIONS

In order to examine the determinants of different types of human resources within health care facilities, we used two different panel regression models shown in tables 84 and 85. In the first model, the total number of administrative personnel (including both contract and civil) as a portion of the total number of all types of personnel (administrative and clinical) was regressed with the same independent variables used in the previous regression. In the second model, we regressed the total number of contract workers (both administrative and civil) in proportion to the total number of all types of personnel. The R-square values for all the

regression were low, due to the low number of municipalities reporting human resource information.

Regression #12. Administrative Personnel (AP)/Total Personnel (TP)

Table 84. Random Effects Panel Model for administrative personnel for years 1994-1997

Dependent Variables	AP/TP	
Total N	N=2216	
Independent Variables	Coeff.	Z
Municipality Certification	-0.003	-0.360
Department Certification	0.057*	8.246
Months Dept certified	-0.012*	-4.186
Months Mun certified	0.001**	1.913
External resources	0.003*	2.295
Own resources	0.003*	4.768
Population	-0.000001	-0.080
% Urban	0.040*	3.722
Constant	0.286*	19.943

* |z| >2.00 ** 1.5< |z| <2.0

Regression #13. Contract Personnel (CP)/Total Personnel (TP)

Table 85. Random Effects Panel Model for CP/TP for years 1994-1997

Dependent Variables	CP/TP	
Total N	N=1367	
Independent Variables	Coeff.	Z
Municipality Certification	0.0567*	4.059
Department Certification	0.055*	4.823
Months Dept certified	-0.001*	-2.111
Months Mun certified	-0.001**	-1.502
External resources	-0.011*	-4.748
Own resources	0.003**	1.696
Population	-0.0002*	-2.003
% Urban	0.014	0.829
Constant	0.230*	7.205

* |z| >2.00 ** 1.5<|z| <2.0

Decentralization had an effect at the municipality level only in terms of the number of contract personnel hired in proportion to the total personnel hired. Municipality certification was a positive, significant determinant of contract personnel, implying that certified municipalities were able to hire more contract personnel. A similar trend was seen in the OLS for contract personnel.

Decentralization had a positive effect on both number of administrative and contract workers at the departmental level. Those municipalities under the jurisdiction of certified departments were able to hire both more administrative and contract personnel.

Intergovernmental transfers were a positive determinant for hiring of administrative personnel, but a negative determinant for contract personnel. This implied that those

municipalities that received more intergovernmental transfers were able to hire more administrative personnel, but less contract personnel.

Own-source resources generated at the municipality level was a positive determinant for both administrative and contract hiring.

Smaller municipalities were able to hire more contract workers, while more urban municipalities were able to hire more administrative personnel.

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