Investigating the Space of Poverty and Health Care: *Poverty, Mortality, and the Inverse Care Law in Seoul*

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Abstract

This study addresses the relationship between poverty, health needs, and health care in South Korea. According to Hart's inverse care law, the availability of good medical care tends to vary inversely with need. The results of this study indicate significant increases in the mortality rate when poverty is high and the number of hospitals is low in the metropolitan area of Seoul, the capital of South Korea. These results support the validity of the inverse care law. Hart was primarily concerned with the effects of market forces on the accessibility of health care. The paradox of the South Korean health care system in a geographical context is that while the authoritative governmental structure supports the development of a private provider market and social policy, the same administrative structure must correct the inequitable distributions of hospitals and assistance for the poor. These findings indicate that the tenets of the inverse care law may apply in some regions but not in others due to differences in the historical formation of the health care system of each region and specific locale.

Keywords: poverty, health care, inverse care law, mortality, Seoul

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Introduction

Analytical studies of disparities in health risks and poverty among different groups and regions have a long history, dating back to the research of Charles Booth and B. S. Rowntree in the late nineteenth century and the Black Report of the 1980s in Britain (Rowntree [1901] 2000; Townsend and Davidson 1988; Curtis 1989; Edwards and Flatley 1996; Powell and Boyne 2001; Glennerster et al. 2004). These studies have examined how regional inequalities, spatial disparities, and spatial variations in income poverty, health, and financial capacity are formed and how they have changed over time.

Communities with the most pressing health needs tend to have the least amount of access to local health services, and this inverse relationship has been found to be an important risk factor for adverse health outcomes (Hart 1971; Haynes 1987; Edwards and Flatley 1996). However, this relationship has not been sufficiently studied in Asia.

This study focuses on South Korea, a nation that has experienced both socioeconomic crisis and reform over the last two decades, in particular within the major social welfare reforms that were implemented after the 1997 financial crisis. These reforms have had a significant influence on the making of social policy in South Korea since 1997. This explores health inequity and the spatial divisions of welfare in the context of a decentralized Seoul. The distribution of health resources and the spatial attributes of regional health and social status are also examined. Additionally, this study explores the inverse care law in terms of the influence of the spatial distribution of health care resources and poverty on the health needs of local populations.

Poverty, Health, and the Inverse Care Law: *Comparisons Using the Inverse Care Law*

Income inequality and poverty are important risk factors for adverse health outcomes, and a strong relationship has been found between an area's income distribution and the health disparities therein (Ronzio,

Pamuk, and Squires 2004; Edwards and Flatley 1996; Haynes 1987).

In studies of U.S. cities, it has been found that the extent of income inequality plays a part in determining the average health status of residents. A positive correlation between income inequality and age-adjusted mortality has been found in U.S. metropolitan cities (Kawachi and Kennedy 1999, 215; Ronzio, Pamuk, and Squires 2004, 175). The analyses showed that income inequality, poverty, and the proportion of a non-Hispanic black population are all positively correlated with premature mortality (Ronzio, Pamuk, and Squires 2004, 176).

Julian Tudor Hart's "The Inverse Care Law," published in *The Lancet* in 1971, remains an inspiring resource for social policy and social epidemiology research. Hart first detailed the existence of large social and geographical inequalities in mortality and morbidity rates in Britain, despite the availability of free medical services to all British citizens through the National Health Service (NHS). Hart's central thesis is that the availability of good medical care varies inversely with need of the population served. In describing the inverse care law, he was principally concerned with the effects of market forces, stating that "no market will ever shift corporate investment from where it is most profitable to where it is most needed" (Hart 1971, 411). Even in systems that provide universal and free services that cover comprehensive health care needs, large social inequalities in mortality and morbidity, as well as differences in the quality and accessibility of health care resources, persist.

One of the strongest pieces of evidence in support of Hart's inverse care law is the deficiency of primary care that is typically observed in socially deprived areas. This disparity is serious because such districts also usually have high rates of poverty and mortality (Haynes 1987, 29-30). In most deprived areas, poor standard primary care reinforces the cycle of poverty in which low income, unemployment, and poor housing conditions combined with poor educational opportunities produce successive generations with poor job skills and poor health. Not only is social deprivation associated with poor health, it also tends to create an additional burden on health care

spending. People who live in substandard housing are likely to need longer stays in hospitals, and people with low levels of education and limited family and neighborhood social networks make little use of preventative services (Curtis 1989, 11-17). In areas where need is the greatest, services are the least able to cope with this pressure. In addition, there is an overrepresentation of medical students who come from professional families and privileged backgrounds. Unless this trend is reversed, difficulties in recruiting doctors to practice in disad-vantaged areas will increase (Haynes 1987, 407-408).

Hart (1971, 405) also noted that higher income groups make bet-ter use of health services. They tend to receive more specialist atten-tion and have better care, and are more likely to get psychiatric help or psychotherapy compared to low-income groups. Because people in lower socioeconomic classes are both sicker and less likely to secure treatment than people in higher classes, they tend to have higher death rates.

Hart's inverse care law has since been demonstrated in Australia, Scotland, and the United States (Hart 1971; Furler et al. 2002; Watt 2002; Ronzio, Pamuk, and Squires 2004; Mercer and Watt 2007). In Australia, for example, general practitioners (GPs) are remunerated on the basis of consultation time, as time spent on counseling patients is an important feature in determining the quality of care in general practice (Furler et al. 2002, 80). Australians in disadvantaged areas visit GPs more often than affluent Australians, but are less likely to have long consultations (Furler et al. 2002, 82). In Scotland, there is a striking association between socioeconomic status and psychological distress, and GPs working in the most deprived areas were more stressed than those working in the least deprived areas (Mercer and Watt 2007, 507-509). The increased burden of ill health in deprived areas results in high demands on the primary care system and is asso-ciated with less access to care, less time spent with doctors, higher levels of GP stress, and lower patient enablement in encounters for psychosocial problems (Mercer and Watt 2007, 507).

However, in some international research, the influence of regional inequality on health and poverty remains ambiguous. Countries with

the lowest levels of income inequality (e.g. Scandinavian countries) do not exhibit the smallest healthcare inequalities (Eikemo et al. 2008, 593). Moreover, in developing countries, geographically uneven income distributions and disparities in health risks are more likely to be politically embedded as a direct or indirect outcome of government policies compared to more democratic nations.

Deprivation and inequalities in health and health care are well recognized, and some studies have attributed this relationship to the psychosocial qualities of community members in areas of high inequality. However, reducing the sociopolitical aspects of this relationship to individual behaviors and cultural choices obscures the importance of local social policies that affect the distribution of health risks and poverty (Ronzio, Pamuk, and Squires 2004, 175).

Since it is important to consider geographical influences on the association between poverty and ill health, this study examines the relationship between poverty and health care in South Korea, focusing on the area around Seoul.

Overview of Poverty and Health Care in Seoul, Korea

Poverty

Korea's first public assistance program, the Protection of Minimum Living Standards Act, was enacted only for the relief of the unable-bodied poor in 1961. Benefit levels were tightly controlled to stay as low as possible under a strict paradigm of economic developmentalism (Ku 2007; Lee and Kim 2007; Hwang 2006). However, the economic crisis of 1997, during which it was revealed that the existing public assistance system could not properly respond to soaring unemployment rates, was a turning point in Korean social policy. As a result, public and civic organizations (progressive civic groups, NGOs, and trade unions) criticized the government for neglecting to create a sufficient safety net during a period of mass unemployment. A new program of public assistance, the National Basic Living Security (NBLS)

Act, was established in 2000, and eligibility was extended to all people living under the poverty line, including able-bodied adults, although the able-bodied were required to comply with work requirements in order to receive cash benefits (Ku 2007; Hwang 2006).

Table 1. Coverage of Public Assistance and Income Distribution in Korea

Year	1991	1996	2000	2003
Coverage (%)	5.19	3.31	2.40	2.84
Gini coefficient	0.27	0.28	0.34	0.34
Relative poverty[a]	9.38	8.97	13.33	16.29

Source: Adapted from Ku (2007, 27) and Hwang (2006, 30).

Note: Although unemployment soared beginning in the 1997 economic crisis, public assistance coverage was not extended to relieve the suffering of the economically unsecured. These circumstances were partly reflected in the lowered coverage after 2000 in the table.

[a] According to OECD critera, households that have an income of less than 50% of the median household income are defined as being in relative poverty.

The number of public assistance beneficiaries was projected on the basis of the annual budget even before an actual survey of potential recipients was undertaken. Therefore, regardless of the actual results of the survey of the needy, the official poverty rate could not exceed what was already allocated in the budget. As the government could manipulate the numbers of the poor by adjusting the total projection of recipients, this projection represented the official poverty rate (Hwang 2006, 32). On the basis of strict eligibility rules, public assistance covered 3% to 5% of the total population over several decades.

The Overall Health Care System and Primary Care

Historically, private enterprise in Korea flourished within parameters set by authoritarian state interventions (Gills 1993, 231). The capitalist developmental state was as successful in increasing the provision of

health care services in the private sphere as state-led industrialization when implemented according to market-conforming principles. The Korean population is covered for risk of medical illness either through the National Health Insurance (NHI) system or through the Medical Aid Benefit Program, an assistance scheme for the poor. With the establishment of the NHI in 1977, Korea reached the goal of universal public health insurance coverage over a very short time—approximately 12 years.

The establishment of the NHI was initiated by the Korean government, and the health care system has strong built-in incentives for doctors and hospitals to increase the volume of patients and reduce consultation time. Despite the government's attempts in the 1980s to allocate health care resources and providers across all geographical areas, there has been little public planning and control concerning the location and supply of preventive health. There is now more competition than coordination between hospitals and clinics, and there is no clear division between primary and secondary care (OECD 2003; Oh and Shin 2008; Chun et al. 2009).

There is very limited regulation of the supply aspect of medical services in Korea (OECD 2003, 20-24), especially regarding the geographical distribution of medical facilities. Medical services are supplied mainly by private providers (private medical schools, hospitals, and clinics). Therefore, there is no gate-keeping by primary care doctors and the referral system is disregarded by patients. Competition between hospitals occurs due to a lack of clear functional differentiation. There are also no institutionalized mechanisms to stimulate a reduction in the variation of medical services, such as governmental plans that adjust regional distribution of local medical resources.

As the country has rapidly industrialized, Koreans have experienced unprecedented improvements in health status. Mortality and morbidity patterns have changed greatly, and the primacy of infectious diseases has given way to lifestyle-related diseases and external causes of death. The three main causes of death are cardiovascular disease, cancer, and accidents/injuries. Traffic-related accidents have remarkably increased, becoming another major external cause of death

(OECD 2003, 2010; Chun et al. 2009).

Primary care should be a hub from which patients are guided through the health system. However, in contrast to the rapid expansion of secondary and tertiary health care services, the primary health care system is poorly developed in Korea, when compared to Britain. There is a public network of primary health care facilities, including public community health centers, primary post clinics, and ambulatory services. Physicians working in primary care clinics do not function as gatekeepers, and therefore not play a role in coordinating primary care services with physicians at other levels of the health care system. Primary care physicians provide specialized care services and compete with secondary care specialists, resulting in primary care physicians not having an incentive to focus on public health and prevention (Chun et al. 2009, 114; WHO 2003, 21; 2008, xvii).

Concentrations of Poverty and Their Implications for Health and Medical Services

The Korean government formulated a five-year national housing supply plan with the ambitious objective of constructing two million dwellings, including 25,000 homes designated for the poor. This plan was implemented between 1988 and 1992, but with a lower number of units. The government plays a primary role in housing policy for the poor through Permanently-Rented Housing (PRH) programs. These housing developments have changed the spatial patterns of poor residential areas in Seoul, as low-income residents have been forced out of the inner city and towards its outskirts (Ha 2004, 147-148). These anti-poverty measures have led to a unique contradiction: there are now concentrations of poverty and an unequal distribution of financial resources that were initiated by housing programs intended to assist the low-income population.

Out of a total of twenty-five districts, two districts, Gangseo-gu and Nowon-gu, located around the outskirts of Seoul, have the highest concentration of PRH program enrollees. The number of low-income dwellings in Nowon-gu district tripled between 1992 and 2004,

while the number in Gangseo-gu district increased almost ten times (Table 2-1).

Table 2-1. Increase of Poor Households in Gangseo-gu and Nowon-gu Districts (2001–2004)

Year	Gangseo-gu		Nowon-gu	
	No. of poor persons	No. of households	No. of poor persons	No. of households
1992	2,219	954	12,229	3,570
1995	14,810	5,213	25,645	8,337
1998	13,445	5,625	15,888	6,040
2001	18,062	8,322	20,030	8,743
July 2004	18,356	9,005	19,722	9,215

Table 2-2. Proportion of PRH Households in Gangseo-gu and Nowon-gu Districts (July 2004)

	No./percentage of PRH households (July 2004)
Gangseo-gu	15,275 (32.3%)
Nowon-gu	13,335 (28.2%)
Total (Seoul)	47,244 (100%)

Source: Adapted from Internal District Office Data (July 2004) and Park and Yi (2005).

Open debate on the issue of balance and distribution of power between central and local governments, as well as between different localities, did not begin in Korea until the 1990s. From 1961 to 1991, the functions and responsibilities of local governments were uniform throughout Korea, but regional inequalities may have been accentuated by decentralization (Bundgaard and Christofferson 1986, 74; Bahl and Linn 1992, 388; Elander 1997, 148). That is, the active role of local governments normally results in variations in levels of services and tax burdens among subnational units by allowing local governments disproportionate levels of budgetary discretion.

Table 3. Percentage of Public Assistance Beneficiaries by District

		Population		Beneficiaries		Percentage (%)	
		Households	Persons	Households	Persons	Households	Persons
Total		3,714,769	10,174,265	84,988	151,893	2.29	1.49
Average of 25 districts		148,590	406,970	3,400	6,076	2.29	1.49
The highest 2 districts	Gangseo-gu	189,523	537,014	8,955	17,928	4.73	3.34
	Nowon-gu	211,142	631,861	9,129	18,803	4.32	2.98
The lowest 2 districts	Songpa-gu	219,650	619,532	2,198	3,826	1.00	0.62
	Seocho-gu	144,176	394,772	1,432	2,506	0.99	0.63

Source: Adapted from Internal District Office Data (July 2004) and Park and Yi (2005).

As a result, districts in which poor neighborhoods are concentrated struggle with the heavy burden of supporting the poor and a lack of resources for their own initiatives. Thus, this study addresses health and poverty gaps across the Seoul metropolitan area and argues for spatially-specific social policies to improve the quality of life and the health of Seoul citizens in light of uneven resources.

The two districts with the highest concentrations of low-income households (Gangseo-gu and Nowon-gu, with poverty rates of 4.7% and 4.3%, respectively) allotted twice as many resources for poverty relief as the two districts with the lowest proportions of poor in Seoul (Songpa-gu and Seocho-gu, with poverty rates of 1% or less; see Table 3). In addition, regional disparities exist across the metropolitan districts of Seoul in terms of health risks, resources for health care, and poverty relief.

Concentrations of poverty result in an uneven distribution of negative effects of deprivation across space, and may also exacerbate fiscal disparities. Moreover, not only does the extent of poverty itself limit a city's fiscal capacity, but rising poverty also links cities to other negative effects under the decentralization of public health services. In other words, having a concentration of low-income residents in one particular area means that the area is unlikely to be able to support strong local services or strong local private businesses or voluntary

sectors (Joassart-Marcelli, Musso, and Wolch 2005; Feitosa and Wissmann 2006).

Hart's inverse care law holds especially true for a society in which market forces determine the distribution of health care, and as a result, inequalities are a major feature of such health care systems (Watt 2002, 252).

Korean health care financing relies heavily on out-of-pocket payments, which made up about 35.7% of total health expenditures in 2007 (Chun et al. 2009, 45). About 90% of all medical institutions are private, and the number of public hospitals has decreased over time due to privatization (OECD 2003, 2010). In addition, the incidence of poverty was found to be between 7% to 10%, but only about 3% of the population was eligible for public assistance and medical aid (OECD 2003; Hwang 2006). Low-income individuals and households may face more financial hardship in cases of illness than middle-class families, and may therefore delay utilization of health care services.

Regional disparities may impose barriers to eliminating poverty, and negative effects could result from high concentrations of poor households, including higher unemployment, precarious access to local services and medical services, and higher exposure to preventable health risks. This study focuses on the inverse care law, or the negative correlation between the need and the provision of health and social services, in the context of Seoul, and examines the relationship between urban poverty and health risks in light of the urgent need for measures to improve regional disparities.

Analyzing the Case of Seoul

Basic Description of Data for Seoul

Although inequalities in health and health care are well recognized (Mercer and Watt 2007; Ronzio, Pamuk, and Squires 2004; Furler et al. 2002), there has been little research regarding how the inverse care law actually operates. Therefore, this study hypothesizes and utilizes

the inverse care law using Seoul, the capital of Korea, as a case study. This study examines the relationship between the availability and need of health care, which are applied and tested statistically.

This study of regional health inequality focuses on the urban space of Seoul, with particular reference to its districts. Out of a total of 25 districts, the three districts in Seoul with the highest standardized mortality rates contained almost 20 percent of all Seoul public assistance recipients in 2009, while the three districts with the lowest standardized mortality rates contained only 9 percent. Moreover, the number of hospitals in Gangnam-gu district (which has the richest resources) is seven to eight times that of the districts with the smallest number of hospitals.

The two districts with the highest numbers of public assistance beneficiaries, Nowon-gu and Gangseo-gu, have a combined total of 533 hospitals and 474 clinics. In contrast, the two wealthiest districts of Seoul have about 40 percent more hospitals and clinics (724 and 706, respectively). The two poorest districts have a poverty rate that is five to seven times higher than the two wealthiest districts, and have almost twice the amount of social expenditures than the other two districts (Seoul Metropolitan Government 2002).

As cities and districts become increasingly responsible for providing services such as health care and public welfare to the poor, concentrations of poverty have exacerbated already existing fiscal disparities. Localized responsibilities lead to an increasingly uneven landscape of poverty assistance, since decentralization and financial block-granting of welfare services go hand-in-hand with local funding conditions. This study examines the inverse care law under such circumstances in the context of Seoul, South Korea.

Indicators of Need and Availability

"Availability" refers to the volume and type of existing services and resources that clients can access. There are many elements to availability: expenditure, health facilities, medical and administrative personnel, the hospital building itself, the extent of improvement, and

even the intent to improve all concerned facilities (Lewis 1975; Powell 1987; Hvinden 1994). Hart's thesis asserts that the availability of good medical care varies inversely with the need of the population being served. However, there is little agreement about the definition of need (Payne 1999, 1-5). Although the principles of evidence-based practice and planning are brought together with the requirement that health authorities undertake health needs assessments of the local population, a wide variety of techniques and methods have been used. These have ranged from the calculation of mortality and morbidity rates, to social surveys, focus groups, forums, and less formal discussions, as well as the observation of local communities.

The accessibility of service for users is closely connected with availability and acceptability from the service providers' side. The ease with which people can reach facilities is also an important factor. Additionally, those who fall below the poverty line are the most price-sensitive users of health care. They are less likely to have insurance coverage, and distance tends to deter them from using health care services (Wagstaff 2002, 100).

Spatial accessibility is not synonymous with effective accessibility, which pertains to whether or not a facility is actually available to a patient, both in psychological and economic terms. Very few people experienced difficulty associated with travel for surgery. Rather, the difficulty that was incurred seems to stem from problems related to personal mobility rather than the distance itself. Acceptability refers to the attitudes and behavior of service providers with respect to health care. All aspects are closely related to the relationship between service providers and users (Phillips, Palfrey, and Thomas 1994; Powell 1987; Wagstaff 2002).

In this study, the standardized mortality rate of the local population is used as the measurable operational variable of need. Because of the close association between the availability of health services and their demand, the number of people treated or on waiting lists are unreliable indicators of need. A measure that is independent of the availability of health services is essential if variations in health from one part of the country to another are to be measured (Haynes 1987,

25-27). The rate of death is corrected for any differences in age struc-
ture between regions (standardized mortality ratios) and is used as an
indicator of need. Rates of self-reported ill health or perceived morbid-
ity are as good an indirect measure as is available. Moreover, the
number of hospitals and beds, health and welfare spending, and local
revenues are used as indicators of availability at the local district level
in Seoul Metropolitan City.

The statistical data sources analyzed in this article are available
from the *Seoul tonggye yeonbo* (Seoul Statistical Yearbook), *2009
Seoul-teukbyeolsi geongang tonggye* (Seoul Health Statistics 2009), and
data from the National Statistical Bureau.[1] All data were surveyed and
collected in the calendar year of 2009. The statistical package used
was SPSS 11.5 for Windows.

Results

This study provides a statistical analysis of the relationship between
financial autonomy, social spending, health care resources, and mor-
tality rates in 25 districts in Seoul. There are currently two types of
available regional data for measuring the level of health of the popula-
tion: (1) the standardized mortality rate, and (2) subjective self-rated
health status. These are district-level data, and unfortunately, more
detailed subunit data from geographical surveys are not available.
According to the Pearson correlation coefficient analysis, no statisti-
cally significant associations were found between the standardized
mortality rate and subjective self-rated health status (Pearson correla-
tion coefficient = $-.203$, $p = .330$). Table 4 shows the results of the
correlation analyses of data from the standardized mortality rate and

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1. The data used in the analysis is combined from three data sources, as follows:
    (1) *Seoul tonggye yeonbo* (Seoul Statistical Yearbook) (Seoul: Seoul Metropolitan
        Government, 2010). http://stat.seoul.go.kr.
    (2) *2009 Seoul-teukbyeolshi geongang tonggye* (Seoul Health Statistics 2009) (Seoul:
        Seoul Metropolitan Government, 2010).
    (3) National Statistical Bureau, "Samang wonin tonggye" (Causes of Death Statis-
        tics), 2002-2012, http://kosis.kr/region/region_03List.jsp#.

Table 4. *Pearson Correlation Coefficient for Standardized Mortality Rate and Self-reported Health Status*

	Standardized mortality rate		Self-rated health status	
Financial autonomy[a]	−.622	(.001)***	.293	(.156)
Welfare spending	.264	(.202)	−.229	(.270)
Health spending	−.164	(.433)	−.100	(.634)
No. of beds	−.357	(.080)*	.059	(.778)
No. of hospitals[b]	−.604	(.001)***	−.084	(.689)
No. of poor households	.434	(.030)**	−.215	(.301)
No. of beneficiaries	.389	(.055)*	−.173	(.408)

*$p < .1$ **$p < .05$ ***$p < .01$

[a]Local revenues/total general account budget ×100.
[b]The number of hospitals includes the total number of general hospitals, hospitals and clinics, special hospitals, and long-term care hospitals.

Note: Numbers in parentheses indicate the degree of significance.

subjective self-rated health status as dependent variables in relation to other independent variables.

The standardized mortality rate correlates with financial autonomy, numbers of hospitals and beds, and the numbers of poor households[2] and individual public assistance beneficiaries. However, subjective self-rated health status did not correlate with any of these variables, probably because subjective answers to survey questions about illness and health cannot provide precise classifications and do not match objective medical diagnoses and conditions. A strong association was found between subjective health status and suicidal ideation (correlation coefficient = −.672, p = .000), and therefore subjective perceptions may be more closely related to a sense of satisfaction or to attitudes towards living conditions than actual and specific needs of medical treatment.

Regression analyses were used to examine the influences of five variables (financial autonomy, numbers of hospitals and beds, and the

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2. In Korea, the Minimum Cost of Living (MCL) announced annually by the government is the criteria most commonly used to define poor households.

number of poor households, and individual public assistance benefi-
ciaries) on the mortality rate in univariate and multivariate (models I
and II) forms. When variables were considered individually (as shown
in the first column of Table 5 below), financial autonomy ($p = .001$),
the number of beds ($p = .080$) and hospitals ($p = .001$), and the num-
ber of poor households ($p = .030$) became important as predictors of
mortality. However, this association disappeared when other variables
were taken into account. In multiple regression analyses, an associa-
tion was found between the number of hospitals and mortality
($p = .024$) in Model I (see the second column of Table 5). One possi-
ble explanation may be that regional affluence and the total amount of
available medical resources—especially the number of beds—were
offset by the number of hospitals, the distribution of medical facilities
(e.g. the availability of emergency rooms and small clinics), and the
level of poverty.

Table 5. *Summary of Univariate Correlation and Multivariate*
Regression Analysis

	Univariate association	Multivariate association	
		Model I	Model II
Financial autonomy	−.622 (.001)***	−.036 (.881)	−.054 (.819)
No. of beds	−.357 (.080)*	−.020 (.920)	
No. of hospitals	−.604 (.001)***	−.567 (.024)**	−.602 (.005)***
No. of poor household	.434 (.030)**	1.471 (.131)	
No. of beneficiaries	.389 (.055)*	−1.032 (.272)	.442 (.036)**
R Square		.615	.589
Adjusted R Square		.514	.530

*$p < .1$ **$p < .05$ ***$p < .01$

Note: Numbers in parentheses indicate the degree of significance.

In the second analysis of Model II, however, the variable "number of
poor" returned as an important factor ($p = .036$) when fewer variables
(financial autonomy, number of hospitals, and number of public assis-

tance beneficiaries) were considered. Poverty held up as a predictor of mortality in the multivariate analysis, while regional wealth (financial autonomy) as a predictor collapsed. It is possible that the relationship between mortality and health care is entirely mediated by accessibility and affordability for patients, rather than by supply-side availability.

The data clearly illustrates that the mortality rate falls when the number of hospitals increases and when poverty decreases. However, this relationship is not observed for the level of financial autonomy or the number of beds or health spending. The results indicate that the mortality rate has more to do with access to health care facilities. This means that accessibility is more important than the abundance of resources. In other words, affluent districts with bigger and more well-equipped hospitals with numerous beds do not necessarily have lower levels of mortality among their local residents. However, having more hospitals (in both Model I and II; $p = .024$ and $p = .005$, respectively) and lower levels of poor households (in Model II) in the area is clearly related to low mortality levels. This evidence indicates that regional disparities in mortality are associated with barriers to access to health care resources.[3]

Summary and Discussion

This study examined the relationship between poverty, mortality, and regional variation in the Seoul metropolitan area of Korea. Mortality rates rose in areas with increasing poverty and fewer numbers of hospitals. Hart's inverse care law was found to be valid in the case of Seoul. In areas with higher levels of sickness and death, accessibility to medical care and hospital support tended to vary inversely with the level of need.

The paradox of the Korean health care system in a geographical context is that while the authoritative governmental structure supports

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3. This study is limited due to the use of restricted regional data, the data of the Seoul Metropolitan area. Therefore, further study is needed for a more comprehensive analysis that uses nation-wide data.

the development of a private provider market and formation of social policy, the same administrative structure must control and adjust for side effects of an inequitable distribution of health care access and assistance to the poor. Regional differences in availability are only one channel by which social inequality permeates the health care system.

The locations of private hospitals and practices that are the most attractive to professionals are not always the most socially equitable. Moreover, the Korean health care system has strong incentives for growth and overprovision due to its fee-for-service reimbursement system, and the emergence of large private hospitals and the geographical concentrations of regional hospitals increase the overall inequality of access. In comparative terms, the high number of consultations per capita and the low number of doctors per capita is considered to be representative of high productivity among Korean doctors and hospital managers. However, the quality of care and attentiveness to patients has deteriorated since less time is spent on consultation due to the increase in the volume of visits.

As shown through statistical analyses, there are independent regional components that affect mortality rates. Indeed, districts with fewer hospitals and a higher proportion of public assistance beneficiaries have higher death rates. This indicates that unequal access to hospitals and low income levels impair accessibility. It is necessary to define a comprehensive health services allocation policy that alleviates the imbalances of geographical distribution, especially with regard to primary health care and emergency services. Improvements are needed to enhance access to services, provide better linkages between different sectors of care, and increase the levels of equitable care and financial aid.

To be fully effective and function properly, primary health services must be designed to work with secondary services in a more integrated manner. Under the Korean health care system, hospitals and health care facilities are not uniformly distributed across the country, and the burdens of health care utilization costs are not progressively distributed. As a result, financial and geographical barriers to access may become insurmountable for people in the bottom tiers of income distribution.

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