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LETTER FROM THE EDITOR

Welcome to the *Academy of Health Care Management Journal*. We are extremely pleased to be able to present what we intend to become a primary vehicle for communication of health care management issues throughout the world.

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A COMPARISON OF HEALTH-RELATED EXPENDITURES: A MULTI-COUNTRY COMPARISON

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ABSTRACT

This paper uses panel data regression models, to empirically examine the determinants of health expenditure in six countries: the United States, Canada, Mexico, the United Kingdom, France, and Germany over a ten year period. Empirical findings emphasize the role of various demographic and economic variables on health expenditures including income level, fertility level, mortality rate, population above age 65 (or old-age dependency), and rural population. The regression results for North America and Europe found the fixed effect- model and the random- effect model are favorable over the pooled model. This paper contributes to the existing literature both in terms of the sample studied as well as variable considered. The results reveal that per capita income and the percent of population over age 65; these factors have significant effects on total health expenditures.

INTRODUCTION

A country's ability to provide for its population's health care needs is influenced by financial abilities, priorities of the government, and the political environment. Throughout history, various organizational research has demonstrated improved outcomes of health care variables such as infant mortality, fertility rates, and morbidity and mortality rates related to a combination of improved socio-economic conditions and public health measures (Guyer, Freedman, Strobino & Sondik, 2000). In response to these findings, many countries have improved health care, education and allocated financial support to programs aimed at continued improvement of socioeconomic conditions and public health.

These improvements are critical as the financial health of a country is important to its success in other areas. The supply of adequate health care, health care demands of citizens and the presence of funds available for health care are important factors in the health of a country. For individual citizens, the presence of an effective, efficient, high quality low-cost health care system is important for health and wellness. Without government-provided, or employer-sponsored, health care, few individuals can afford the ever rising costs of doctor visits, surgeries, or medications.

The purpose of this paper is to analyze data from North American and European countries and contrast multiple health care and health status variables along with economic and

social variables within each selected country to determine the link between expenditures and improvements in such health measures. The specific countries were chosen for study as they all published data from the 1990-2000 decade regarding health expenditures, fertility and mortality rates, population ratios, and per capita Gross Domestic Product (GDP). The United States (US), Canada, and Mexico represent North America while Germany, France, and the United Kingdom (UK) represent Europe. This information is useful in comparing nations based on growth or decline and how this change relates to a country's expenditure on health care. The findings are also important to determine how health care expenditures impact key measures of health.

REVIEW OF LITERATURE

Since the pioneering paper on international health comparison is by Newhouse in 1977, there has been much research on health expenditure determinants. This interest in understanding health care expenditure has led to the creation of theories as well as the analysis of health care expenditures (Gerdtham and Jonsson 2000). There is an ongoing debate in the U.S. about possible universal coverage as a way to decrease the costs of care for the poor and the elderly. Recent statistics show much variation in spending among countries with no correlation between expenditure and performance goals (www.oecd.org).

While France is often touted as a model of health care efficiency for study, all do not agree. Heath, Dhalla, and Thomson (2008) agree it is misleading to state that "the World Health Organization anointed the French health care system as the best in the world" and that it "ranked Canada 30th in the same survey." France only ranks first in efficiency and this was calculated by relating a country's overall health achievement to its health system expenditures. Lopes (2007) supports the Organization for Economic Co-operation and Development's view of France's total expenditure on health as a percentage of gross domestic product which was 10.5% in 2006 and began to match and then surpass Canada's at 9.5%. Reforms in 1996 through 1998 also sought to widen the financial base of the French social security system. The French national insurance system has maintained constant deficits since 1985; the deficit now tops $14.77 billion.

Rodwin (2003) agrees the French health system combines universal coverage with a public-private mix of hospital and ambulatory care and a higher volume of service provision than in the United States. Although the system is far from perfect, its indicators of health status and consumer satisfaction are high; its expenditures, as a share of gross domestic product, are far lower than in the United States; and patients have an extraordinary degree of choice among providers.

Kjellstran, Kovithavongs, and Szabo (1998) found the U.S. had the most inefficient outcomes in relation to money spent on health care and that one third of the retail price of prescription medications was spent on administrative costs and investors. However, the advent of "managed care" in the United States is having a favorable influence on the value of health care provided through private health insurance. Gains have been made by increasing the level of

preventive care spending and reducing unnecessary care. However, overbearing managed care systems can cause a backlash by consumers and are subject to governmental intervention ("Private Health Insurance," 2004).

Frenk (2006) supports the need for Mexican health care reform because its health system has not kept pace with the pressures of disease, malnutrition, common infections, and reproductive health problems along with non-communicable disease and injury. Despite the fact that life expectancy at birth in Mexico has improved from 42 years in 1940 to 73 years in 2000, major inequalities persist in health and access to health care (Barraza-Llorens, Bertozzi, Gonzalez-Pier, and Gutierrez, 2002.

Tanne (2008) agrees the cost of common medical, surgical, and dental procedures varies widely across nine countries of the European Union, based on HealthBASKET (Health Benefits and Service Costs in Europe) studies but found the total cost of care for each procedure was lower than the average due in part to lower wage levels.

Sox (2008) agrees that reforming health care will not be easy, but argues that it's not impossible. Other countries have done it, and they have lower costs and better overall systematic performance than the U.S. Garber, Goldman, and Jena (2007) go so far as to suggest that spending could be reduced by as much as 30 percent without adversely affecting American's health. According Garber, et. al. (2007), the RAND Health Insurance Experiment (HIE) showed that U.S. spending on health care could be reduced by 30 percent if we improve the efficiency of the health care and if we delivered it in an efficient manner. The National Center for Policy Analysis (at www.ncpa.org) argues that the US devotes a significant amount of its health care expenditures to advanced cases and the elderly that use proportionately more resources, effecting the overall quality of health care.

Health Care Expenditures

Total health care expenditure continues to grow in United States at a fairly substantial rate although recent growth rate has shown some signs of moderating. Significant trends within the last few years are toward increased spending for medications that now comprise over 16% of all health care related expenses. However, capital spending is the area seeing the most significant level of growth. Investment in new technology has more than doubled in the last seven years ("Health spending", 2003). Technological investment in molecular biology, computer and medical science, electrical, mechanical, genetics and biomedical engineering (including cell, molecule and tissue), instrumentation, and advances in early detection that have allowed successful treatment of conditions that were previously untreatable. Ironically, this can serve to add even more cost to the health care system, as a larger segment of the population will live longer and utilize greater amount of health care services in the future (Holtz-Eakin, 2004).

In considering world health care, industrialization has brought wealth, prosperity, and improvements to many economies as proven by a general decrease in mortality rates. The recent

past has seen breakthroughs in the prevention and treatment of conditions such as heart disease, cancer, stroke, and premature birth. In most countries, universal health care coverage, whether public or privately financed, provides financial security against the costs of serious illness, thus promoting access to better treatments and preventative services.

Health care expenditure has risen in many countries, with the US in the lead (Avorn, 1998; Kjellstrand, Kovithavongs, and Szabo, 1998). These rising health care costs are causing a shift in how care is administered and financially covered. Tighter controls and increased scrutiny on unnecessary procedures are becoming the norm, not just in the United States' private health sector but also in the more heavily government-sponsored systems in other countries. Notably, as the cost of care increases (and thus the cost of private insurance increases), a growing number of patients are moving to government sponsored health care programs where available. In countries where both private and government sources exist, cost sharing between the two entities is a growing practice. As technology, demographics, and socioeconomics continue to change, the level and type of health care spending will, by necessity, evolve ("Private Heath Insurance," 2004). Narayan (2007) examined per capita health expenditures in various countries and found evidence of convergence of per capita health expenditures of countries including the UK, and Canada to spending levels of the U.S. and also pointed out this is due to rising service costs of providing health care.

In comparing health care expenditure by per capita GDP in each country, Europe spends notably more on public health care and considerably less on private health care than both the US and Mexico. The focus of the expenditure on public health care as opposed to private health care typically correlates with a country's health care policies and laws. European nations provide a public health system for their population that is funded by taxes. Therefore, a smaller portion of the total percent of health care expenditure is allocated to the private sector. Germany, by international comparison, spends the largest amount of its GDP on health care services of the European countries studied (www.oecd.org).

In terms of health expenditure as a percentage of GDP, the U.S. (the only country in the study without public health care for the general population) spends more on health care than the other five countries. For example, United States total expenditure on health, as a percent of GDP, was about 13.58% for the period from 1998-2002. Mexico (at 6.04%) and the UK (at 7.3%) had the lowest health expenditure percentage. Canada, while in North America, has health care policies that are more closely aligned with European countries. Canada (at 9.3%) spends almost the same on health care as Germany (at10.7%) and France (at 9.5%).

In comparing the per capita total expenditure (in U.S. dollars) for health care for European countries from 1998-2002, Germany had the highest expenditure at 39.20%, followed by France at 33.52%, whereas the UK had the lowest expenditure at 27.3%. The per capita total expenditure in France and Germany fluctuated during these years while expenditures in the UK increased steadily. This would seem to indicate that UK is pays more attention to its health sector than France and Germany.

The per capita total expenditure (in U.S. dollars) for health care in North America for the same period, 1998-2002, shows the United States had the highest expenditure at 66.17% whereas Mexico was the lowest at 4.49%. Canada was at 29.34%, thus there is a significant gap between the highest and lowest expenditures in North America. While Europe saw cyclical changes in its rates, North America experienced percentage increases throughout 1998-2002. The spread of the per capita expenditures for all countries studied highlights significant differences in the level of spending between the six countries. For example in 2002, the U.S. per capital total expenditure on health care was $5,274, followed by Germany at $2,631, France at $2,348, Canada at $2,222, the U.K. at $2,031, and finally Mexico at $379. This seems to indicate that US health spending which exceeds that of other countries with much older populations is in part due to higher U.S. per capita gross domestic product (GDP).

In a similar, prior study, Reinhardt, Hussey, and Anderson (2004) examined health spending using data published by the Organization for Economic Cooperation and Development (OECD). Specifically, they explored reasons why U.S. health spending towers over that of other countries (with much older populations). They cite the higher U.S. per capita gross domestic product and a highly complex, fragmented, payment system with high administrative costs.

Health Status – Fertility and Mortality Rates

Costa-Font, et al. (2008) studied the sensitivity of future long-term care demand and expenditure estimates to official demographic projections in four selected European countries including Germany and the United Kingdom, and found significant differences in assumptions about demographic change and its effect on the demand for long-term care, and on relative and absolute long-term care expenditure. They concluded mortality-rate assumptions can have a considerable influence on welfare policy planning.

In comparing data from the six countries for this study, the distribution of health care expenditure did not have an effect on infant or adult mortality rates. The mortality rates are almost identical among the six countries studied. Interestingly mortality rates remained similar in the U.S. and the UK despite different patterns of public and private health care spending. As the most recent data demonstrate, health-related spending is more than 8% of the GDP on average for France, the UK, and Canada while expenditures in the U.S. and Germany exceed 10% of GDP (www.oecd.org).

Yet the relationships between mortality, life expectancy, medical progress, and the economy are not clear. For example Kjellstran, Kovithavongs, and Szabo (1998) analyzed the affiliation between mortality rates in avoidable (with medical treatment) and unavoidable diseases over a decade in six countries. Variables in the study were the cost of medicine both in dollars and as a fraction of the GDP, the relation between different mortality rates, and the amount of money spent by countries on health care from 1980-1990. In their study, death rates

in the U.S., Canada, Germany, and France declined, while life expectancy increased, thus decreasing avoidable deaths by 38% and unavoidable deaths by 10%.

The data on life expectancy shows that it was the highest in Canada and Germany and it is the lowest in the U.S and Mexico. While health expenditures as measured by dollars per capita has increased in every country, the percent of GDP spent on health has increased very little except in the U.S. and Canada where it has increased. Interestingly the U.S. spends more on health care than any country, yet it has lower life expectancy than Canada, France, Germany, or UK. With Medicare and Medicaid , the U.S. spends a significant amount of money on care for the elderly and the indigent, with an inadequate relationship between spending and the clinical outcomes.

For all countries studied, the total fertility rate had an effect on health care expenditures. France, Germany, and the UK had an average total fertility rate of 2.15% in 1993 versus 1.63% in 2003; whereas Canada, Mexico, and the U.S. had an average fertility rate of 1.83% in 1993 versus 2.03% in 2003. The increase in Mexico's fertility rate (from 1.65% in 1993 to 2.5% in 2003) could produce a boost for their economy given a growing population.

This line of reasoning leads us to the following two hypotheses:

H1: There is a positive relationship between total health expenditure variables and total fertility rate.

H2: There is a positive relationship between total health expenditure variables and infant mortality.

Economic and Social Issues – GDP, Elderly Population and Rural Population

The rising cost of health care may be related to the aging population (Binstock, 1993). Evidence suggests as people grow older, more money is spent on medical care. As an example, the "baby boom" was a phenomenon restricted to developed countries least impacted by World War II (Foot, 1992) when birthrates and fertility peaked. Baby boomers are commonly defined as those individuals born between 1946 and 1964. In 2009, that would have made them between 45 and 63 years old. There are about 76 million boomers in the U.S., representing about 29 percent of the population. In Canada, they are known as "Boomies;" six million reside there. In Britain, the boomer generation is known as "the bulge" (http://www.u-s-history.com/pages/h2061.html). Immigrants too added to the population of the U.S. and Canada between 1946 and 1964 peaking in 1958.

Both the U.S. and Canada experienced huge population growth from the 1940's to 1960's. These "Baby Boomers" have always had an effect on market direction because of supply and demand principles. The size of the population aged 60 and over has increased dramatically in the six countries studied from 1990-2000 while GDP consistently climbed over

the same decade. In 2003, Germany's population age sixty and over was 24.4% followed by the UK at 20.8%, France at 20.5%, Canada at 17.4%, the U.S. at 16.3%, and Mexico at 7.4%.

The baby boom is an example of how the socio-economic standing of a country can affect and create a trend for years to come. Data shows that fertility rates in the United States declined sharply between the Baby Boom years of the 1950s and early 1960s and 1980. For example total fertility fell from 118 births per 1,000 women aged 15 to 44 in 1960 to 68 births per 1,000 women in 1980 (www.childtrendsdatabank.org). If this decline in total fertility persists, then this can lead to a rapidly aging population and, in the long-run, this may place a burden on the Social Security system because the pool of younger workers responsible for supporting the older population is smaller while at the same time the dependent elderly population is getting larger. Thus when the first boomers reach the age for Social Security in the U.S. they will require more health care which will lead to an increase in health care costs.

A Canadian study in 2003 reported the total per capita expenditures in that country to be just under $4,000. However, when expenditures were further defined by age groups, the study revealed that average expenditures for persons 85 years old and older jumped to a staggering $17,000 per person ("Health Spending," 2003). In comparison, the citizens of Great Britain are also publicly insured yet care is rationed for the elderly within this system (Rivlin, 1999); still more money is spent on the aged population. In the U.S., the tax-funded Medicare program is the only source of universal public insurance for the elderly.

For all countries studied, the population age 60 and over is expected to have an effect on health care expenditures as people typically need more health services as they age. In addition, the number of doctors per capita varies substantially across countries. For example, in U.S. there are 5.5 practicing physicians per every 1,000 persons, in Canada it is 2.1 physicians per 1,000 persons, in France it is 3.3 and in Germany it is 3.6 physicians per 1,000 persons (www.who.int and www.oecd.org). These average numbers, too, understate the clustering of physicians in major metropolitan areas and do not highlight the frequent scarcity of medical care in rural areas. Thus, one would expect population in rural areas will be less healthy than the population in metropolitan areas due to the shortages of medical care facilities. The issue of the influence of per capita income; the population of those aged 65 and above; and the total percentage of total rural population leads one to the next three hypotheses:

H3: There is a positive relationship between total health expenditures and economic (per capita income) and social status.

H4: There is a positive relationship between total health expenditures and the total population ages 65 and above.

H5: There is also a positive relationship between total health expenditures and the percentage of rural populations.

METHODOLOGY AND VARIABLE DEFINITIONS

The large body of literature on the subject of health expenditure determinants points to a number of demographic and economic variables. Considering these relationships, we define DSV_i as the demographic status matrix (TFR_i, IMR_i), where the fertility rate is TFR_i, and IMR_i is infant mortality rate. We also define ESV_i as the Economic and Social Status variable Matrix $(PC_{1,i}, P65_{1,i}, PRUL_{1,i})$, where $PC_{1,i}$ is the gross domestic product per capita at constant 1995 U.S. dollars prices, $P65_{1,i}$ is the total population ages 65 and above, and $PRUL_{1,i}$ is the percentage of total rural population. Finally, we define the per capita health expenditure matrix HEV_i, as our dependent variable. This variable (HEV_i) is defined as the sum of public and private health expenditures as a ratio of total population, and

Assuming there is significant linear correlation between the independent variables DSV_i, and ESV_i, there are matrices $\beta_i = \begin{pmatrix} \beta_{1,i} \\ \beta_{2,i} \end{pmatrix}$, and $\Gamma_i = \begin{pmatrix} \gamma_{1,i} \\ \gamma_{2,i} \\ \gamma_{3,i} \\ \end{pmatrix}$, and numbers α_i. The linear function is:

$$HEV_i = \alpha_i + DSV_i \cdot \beta_i + ESV_i \cdot \Gamma_i \quad \text{.....(1)}$$

The estimated coefficients for the above function are:

$$HEV_i = \hat{\alpha}_i + TFR_i\hat{\beta}_{1,i} + IMR_i\hat{\beta}_{2,i} + PC_{1,i}\gamma_{1,i} + P65_{1,i}\gamma_{2,i} + PRUL_{1,i}\gamma_{3,i} \quad \text{.....(2)}$$

and

$$\frac{dHEV_i}{dTFR_i} = \beta_{1,i} \qquad \frac{dHEV_i}{dIMR_i} = \beta_{2,i} \qquad \frac{dHEV_i}{dPC_{1,i}} = \gamma_{1,i}$$

$$\frac{dHEV_i}{dP65_{1,i}} = \gamma_{2,i} \qquad \frac{dHEV_i}{dPRUL_{1,i}} = \gamma_{3,i}$$

Where $\beta_{1,i} > 0$ $\beta_{2,i} > 0$ $\gamma_{1,i} > 0$ $\gamma_{2,i} > 0$ $\gamma_{3,i} > 0$

In analyzing panel data (see Mundlak, 1978 and Mundlak & Yahav, 1981 for a discussion of panel data), cross-sectional and period specific effects can be handled using the fixed effects and the random effects models. Applications of the classic fixed and random effects models for panel data are common in the literature. A primary advantage of these models is the ability to control for time-invariant omitted variables that may bias observed relationships. The major differences between the random effects model and the fixed effects models is that in the former the omitted time-invariant variables are assumed to be uncorrelated with the included time-varying covariates, while in the later they are allowed to correlate (Mundlak 1978). In this paper, we used both the fixed- effects model, and the random-effects model to estimate the health expenditure model (equation 2) and we compare their results with those of the pooled regression model. The model which gives better P-values is considered more efficient estimator of our equation.

The panel data for this study were drawn from the World Development Indicators CD-ROM (2003) for 1990-2000. The data was collected for two groups of countries – France, the U.K., and Germany as the European group and the U.S., Canada, and Mexico as the North American group. The use of panel data has advantages over cross sectional data. First, the panel data allow us to capture the relevant relationships about variables over time. Second, it allows us to account for the individual country's' effect.

This ratio measures per capita health expenditure and covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health (but does not include provision of water and sanitation). Data are in current U.S. dollars[1].

The determinants used in this paper are as follows: two independent **v**ariables describe the health status variables were used. These are the total fertility rate TFR_i and the infant mortality rate IMR_i. The total fertility rate TFR_i is defined as the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates[2]. The infant mortality rate IMR_i is defined as the number of infants dying before reaching one year of age, per 1,000 live births in a given year[3]. Total fertility rate and infant mortality rate are expected to have positive relationship with health expenditure.

Economic and Social Status Variables: Three independent variables describe the economic and social status variables were used. The main economic variable, per capita income $PC_{1,i}$, is computed as gross domestic product divided by midyear population. Gross domestic product is the sum of gross value added by all resident producers in the economy plus any product taxes but minus any subsidies not included in the value of the products. Data on gross domestic product are in constant 1995 U.S. dollars[4]. Per capita income is expected to be positive relationship with health expenditure.

The main social status independent variables used are total population ages 65 and above $P65_{1,}$, and the percentage of total rural population $PRUL_{1,}$. Population is based on the de facto definition of population, which counts all residents regardless of their legal status or citizenship -- except for refugees not permanently settled in the country of asylum, which are generally considered part of the population of the country of origin[5]. The old age dependency ratio ($P65_{1,}$; total population aged 65 and above) is used here because it is more relevant for the sample countries. The expected sign of the population ages 65 and above would be positive with total health expenditure.

The rural population is calculated as the difference between the total population and the urban population[6]. The variable used here $PRUL_{1,}$ is constructed as the ratio of the rural population to the) total population.

ESTIMATION RESULTS

Results of estimating Equation 1 are shown in Table 1 for North America and Table 2 for Europe. Both tables show the results of (i) the pooled panel model regression, (ii) the fixed-effect model, and (iii) the random- effect model.

The result for North America, in the pooled model, show the estimated coefficient values for the infant mortality rate IMR_i are positive and significant as expected at the 0.01 level in the random effect model and significant at the 0.05 level in the fixed- effect model and the pooled model in supporting H1 through H5.

Table 1
North America Health Expenditure Determinants Dependent Variable: Δ Log Hev

Method: Panel Least Square			
Variable (Coefficient)	**Pooled Model (Common Coefficient)**	**Fixed Effect Model**	**Random Effect Model**
Constant	-0.70322 (-1.372366) [0.1851]		-0.617961 (-1.334697) [0.1970]
Δ Log *TFR*	0.17539 (1.615761) [0.1218]	0.155035 (1.407019) [0.1765]	0.167897 (1.610233) [0.1230]
Log $IMRt-1$	0.301626** (2.232753) [0.0372]	0.471158** (2.432671) [0.0256]	0.258509* (2.013448) [0.0577]

Table 1 **North America Health Expenditure Determinants Dependent Variable: Δ Log Hev**			
Method: Panel Least Square			
Variable (Coefficient)	**Pooled Model (Common Coefficient)**	**Fixed Effect Model**	**Random Effect Model**
Δ Log *PC*	5.293816*** (7.990743) [0.0000]	5.752653*** (7.744511) [0.000]	5.583269*** (8.368994) [0.0000]
Δ Log $P65$	4.488554** (2.274950) [0.0341]	1.818342 (0.278929) [0.7835]	4.155822** (2.377267) [0.0275]
Δ Log *PRUL*	0.290488 (0.199287) [0.8441]	0.486169 (0.302156) [0.7660]	0.311675 (0.246367) [0.8079]
Δ Log $HEVt-1$	0.285782** (2.687750) [0.0142]	0.268681** (2.159595) [0.0445]	0.323811*** (3.078757) [0.0059]
Effect Specifications			
		Cross-section fixed (dummy variables)	**Period Random**
R-squared	0.777713	0.805113	0.805378
Adjusted R-squared	0.711026	0.718496	0.746991
DW stat	1.852329	2.067804	1.893583
F-statistics	11.66227***	9.295133***	13.79389**
Prob(F-stat)	(0.000012)	(0.000050)	(0.000003)
Notes: T-statistics are in parentheses and P values in squared bracket. ***,**, and * indicates significance at 1, 5, and 10 percent level respectively			

Table 2 Europe: Health Expenditure Determinants Dependent Variable: Δ Log HEV			
Method: Panel Least Square			
Variable (Coefficient)	**Pooled Model (Common Coefficient)**	**Fixed Effect Model**	**Random Effect Model**
Constant	-0.968950 (-1.037611) [0.3140]		-0.968950 (-1.632203) [0.1210]
Δ Log $TFRt-1$	-0.856786 (-1.032373) [0.3164]	-0.517403 (-0.602863) [0.5556]	-0.856786 (-1.623964) [0.1228]
Log $IMRt-1$	0.537154** (2.706473) [0.0150]	0.160057 (0.597477) [0.5591]	0.537154*** (4.257390) [0.0005]
Δ Log $PCt-1$	3.919096** (2.792921) [0.0125]	3.411901** (2.494853) [0.0248]	3.919096*** (4.393376) [0.0004]
Δ Log $P65t-1$	5.098205 (1.713329) [0.1048]	52.04604* (1.776200) [0.0960]	5.098205* (2.695136) [0.0153]
Δ Log $PRULt-1$	15.82828 (0.756929) [0.4595]	70.97697 (1.130085) [0.2074]	15.82828 (1.190679) [0.2501]
Log $HEVt-3$	0.062851* (1.924869) [0.0711]	0.079839** (2.427477) [0.0283]	0.062851*** (3.027897) [0.0076]
Effect Specifications			
		Cross-section fixed (dummy variables)	**Period Random**
R-squared	0.526708	0.637680	0.526708
Adjusted R-squared	0.359664	0.444443	0.359664
DW stat	1.858947	2.163157	1.858947
F-statistics	3.153103**	3.299990**	3.153103**
Prob(F-stat)	(0.028890)	(0.022162)	(0.028890)
Notes: T-statistics are in parentheses and P values in squared bracket. ***, **, and * indicates significance at 1, 5, and 10 percent level respectively			

North American Results

Per capita income level $PC_{1,i}$ has a positive sign and is significant at the 0.01 level in all the three models indicating income level is an important determinant of health expenditure in the North America countries studied. In particular, a percentage point increase in per capita income increases health expenditure by over 5.29 percentage points.

The coefficient for the total population ages 65 and above, $P65_{1,}$ is positive and significant at the 0.05 level in the random effect and the pooled models. Thus a one percentage increase in the elderly population will increase health expenditures by over 4.15 percentage points in the random- effect and the pooled model.

The coefficient variable for the total rural population $PRUL_{1,}$ is positive but statistically insignificant in explaining health expenditures. The result show *lagged* health expenditure $HEVt-1$ is positive and statistically significant at the 0.01 level in the random- effect model and at the 0.05 level in the pooled and the fixed- effect models. The goodness-of-fit of the model was reasonably high (Squared=0.80) in the random effect model and the fixed income effect. Overall results show the random- effect model and the fixed- effect model are preferred to the pooled model.

European Results

The result for Europe shows the estimated coefficient values for the infant mortality rate IMR_i is positive and significant as expected at the 0.01 percent level in the random- effect model and significant at the 0.05 level in the pooled model. The per capita income level $PC_{1,i}$ is positive and significant at the 0.01 percent level in the random- effect model and significant at the 0.05 level in the fixed- effect model and the pooled model. This indicates income level is a very important determinant of health expenditure in the European countries studied and is consistent with the results for the North American country group. For the European countries, a percentage point increase in per capita income increases health expenditure by over 3.41 percentage points.

The coefficient for the total population ages 65 and above, $P65_{1,}$ is positive and significant at the 0.10 level only in the fixed- effect model. The coefficient variable for the total rural population $PRUL_{1,}$ is positive but statistically insignificant in explaining health expenditure.

Similar results were obtained for the North America country group. The results show that the *lagged* health expenditure variable $HEVt-1$ is positive and statistically significant at the 0.01 level in the random- effect model and at the 0.05 level. The range of the goodness-of-fit as measured by R^2 is between 0.52 in the random effect model to 0.64 in the fixed- effect model.

The overall result shows the random- effect model and the fixed- effect model are preferred to the pooled model for Europe country group in supporting H1 through H5.

DISCUSSION AND CONCLUSIONS

This paper has empirically examined the demographic and economic determinants of heath expenditure in a North American country group as well as a European country group. Findings indicate variables including the infant mortality rate; per capita income, percent of population aged 65 and over (old age dependency), and the lagged health expenditure are important determinants of health expenditure in the North American country group. The overall results support prior empirical literature, specifically Lopez-Casasnova and Saez's (2006) findings that increases in the percentage of population over 65 and of public health expenditures raised overall health care expenditures.

The empirical analysis found two interesting results. First, among the demographic variables, infant mortality rate is more important than the fertility rate in explaining total health care expenditures. Secondly, among the economic and social status variables, per capita income and the percent of population aged 65 and over (old dependency ratio) are important determinants of health care expenditures.

The findings of this paper have important policy implications. Higher per capita income level is an important determinant of health expenditure. To maintain a healthy population, the North American country group and European country group must follow economic policies to promote economic growth and increase per capita income. In addition, they must initiate policies to address other needs such as poverty reductions, and promotion of new programs for an active ageing, including life-long education and training. In addition, developing policies to reduce infant mortality rates in the North America country group would reduce the total health expenditure. Further research is needed to confirm these findings with a larger sample of countries and a larger group of longitudinal data for multiple decades.

To maintain a healthy population, North America and Europe must continue economic policies promoting economic growth to increase per capita income. Policies must be created to meet the needs of the increasing, older population including the elimination of discriminations, financial, psychological and physical abuse and other crimes against older persons. Finally, policies to reduce infant mortality rates, such as increasing the proportion of mothers getting early prenatal care, reducing smoking by pregnant women, preventing child malnutrition, as well as medical research to better understand and prevent birth defects, and premature birth, are essential for reducing health care expenditures in the long run. Implications of the findings are presented along with heuristic implications.

Programs to improve health of citizens should be considered and these should focus on the benefit of personal management of wellness, the role of diet and exercise in health, and other programs to assist in controlling major risk factors (i.e., hypertension, high cholesterol, stroke,

smoking cessation, effects of alcohol and drugs). Health expenditure on population aged 65 and above represents the lion shares of the total health expenditure. This segment needs to be given incentives to take advantage of the programs available to minimize risk factors.

Understanding the importance of health care spending is important. In order to facilitate such understanding businesses can offer in-house programs for employees to reduce their insurance costs in employer-sponsored plans. In countries with government provided health care, businesses and government must works together to implement wellness programs and encourage and support participation. Both systems need reforms to improve the efficiency and effectiveness of health care spending as these findings suggest.

For those individuals managing health care, attention should be paid to programs which are cost effective and those that are not. Long term data can yield important findings and point to needed changes in programs. On-site training, classes, and engaging in preventive care at businesses, community, and civic organizations, as well as a national or international marketing campaign for personal responsibility for personal health may be appropriate.

HEALTH CARE CHANGES PROPOSED FOR THE U.S

For some time there has been debate about whether there should be fundamental comprehensive health care reform in the United States. Some people ask why reform is needed, while others have been asking for a solution to healthcare problems for many years. The US government is at the time of writing working with the Congress in an uphill battle to pass comprehensive health reform. The Obama Administration believes their proposed reforms will help control rising health care costs, guarantee a patients' choice of doctor, and assure high-quality, affordable, health care for nearly all Americans. At the same time, the Obama Administration is frantically trying to pass a reform bill that will affect millions of Americans in a very personal way. At the present time, the U.S. Senate has numerous bills circulating in various committees all involving restructuring the healthcare system; the House of Representatives also have several plans for restructuring healthcare in circulation. Senators and Representatives are also conducting town hall-type meetings with constituents and interest groups in an effort to sell different restructuring plan.

Despite the advantages of a universal health care system, the issue in the United States is highly politicized. Some of the advantages of a universal health care include facilitating the sustenance and growth of small businesses by decreasing the cost of providing health insurance benefits to employees (http://en.wikipedia.org/wiki/Health_care_reform_ debate_ in_the_ United_States).

Another argument for a national health care system is that universal health care would provide for uninsured adults who may forgo treatment that they need for a chronic health condition (http://en.wikipedia.org/wiki/Health_care_reform_debate_in_the_United_States .) Advocates of health care reform argue that moving to a single-payer system would re-allocate

the money currently spent on the administrative overhead. Those who support the health reform argue that United States currently spends more money on health care than any other country in the world and still we have millions with no health coverage (Reference http://www.healthreform.gov/about/index.html). To counter those who call the new approach "rationing" President Obama argued the US healthcare is already rationed, based on income, type of employment, and medical pre-existing conditions. He argued that millions of Americans are denied coverage or face higher premiums as a result of medical pre-existing conditions (http://en.wikipedia.org/wiki/Health_care_reform_debate_in_the_United_States). Those who contest the publicly funded health care argue that the system would not work. They point to Canada, United Kingdom and Germany as examples (http://www.healthreform.gov/about/index.html). They argue these publicly controlled systems have poor quality. These free market advocates argue that the current system in the US leads to faster development of newer drugs for cancer patients. Those against a national health care system argue that health care is not a constitutional right, free health care could lead to an overuse of medical services which eventually will further increase the overall cost.

The suggestions for reform have not been met with overt enthusiasm from most Americans. A big challenge to the ongoing debate on health care reform is to provide people with more information about the advantages and the disadvantages of full coverage. Although the US has a very large and complicated health care system, it is still the only industrialized nation that does not guarantee access to health care as a right of citizenship. Town-hall meetings, interviews through various media outlets, and even televised speeches from President Obama have all been focused on trying to inform the average American about the positives, what the reform will do for them as Americans. Today, the big issue of reform is centered around who should have access to health care and under what circumstances, and the quality of services received as compared to the high premiums which are paid. The President believes that under the concept of "total coverage", premiums would be lowered (http://www.msnbc.msn.com/id/33138097/ns/politics-health_care_reform). Because America has some of the best doctors, drugs, and technology in the world, we should also have the best health care system where everyone is able to get treatment. However, despite the effects of politicians, many Americans are still undecided about the issues surrounding healthcare reform efforts. Even for well-informed and educated citizens, finding unbiased information can be difficult as ever voice in the debate seems to have a great stake in the tax dollars which such a program will generate.

AREAS FOR FUTURE RESEARCH

Future research should include a variety of countries for comparison, particularly data from less-wealthy countries for comparison in the European group as it is available. Additional data beyond the 10-year period should also be studied for a richer, longitudinal data set for

comparison. Other countries too should be studied beyond North America and a small sample of Europe to include Asia and developing areas, particularly in Russia, China, Brazil, and India.

Additional, studies should examine the ethics of managed care and the effect of limiting or rationing health care on high- risk groups, including the elderly and those with chronic illnesses, are appropriate or in the best interest of the public. Further ethical studies of international data can assess the view of quality, affordable health care for all citizens as a human right. Comparisons and contrasts between national health care and private systems should be made to determine the benefits of each model. Studies should compare the administrative costs of delivering health care across systems and countries to learn best practices for benchmarking. Other comparisons between the U.S. model and national health care should be made to assist the U.S. in developing solutions to spiraling health costs and the rising number of uninsured populations. Further research should include additional variables beyond life expectancy and fertility, and mortality and move to quality of life issues.

AUTHORS' NOTE

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ENDNOTES

1 Source: World Health Organization, World Health Report and subsequent updates and from the OECD for its member countries, supplemented by World Bank country and sector studies.

2 Source: World Bank staff estimates from various sources including the United Nations Statistics Division's Population and Vital Statistics Report, country statistical offices, and Demographic and Health Surveys from national sources and Macro International.

3 Source: World Bank staff estimates using data from the United Nations and UNICEF, State of the World's Children.

4 Source: World Bank national accounts data, and OECD National Accounts data files.

5 Source: World Bank staff estimates from various sources including the United Nations Statistics Division's Population and Vital Statistics Report, country statistical offices, and Demographic and Health Surveys from national sources and Macro International.

6 Source: The data on urban population shares used to estimate rural population come from the United Nations, World Urbanization Prospects. Total population figures are World Bank estimates.

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EMPLOYEE PERCEPTIONS OF INDIVIDUAL AND ORGANIZATIONAL COMMITMENT TO THE GREEN MOVEMENT AND THEIR PERCEIVED IMPACTS IN HEALTHCARE VS. NON-HEALTHCARE ORGANIZATIONS

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ABSTRACT

In this research, we find support for a proposed set of linkages among employee perceptions of organizational green orientation, individual green orientation, and impacts of the green movement on organizational performance in healthcare vs. non-healthcare organizations. Specifically, we find that employees who believe that they and their organizations are aligned with the green movement are more likely to have higher outcome perceptions. These findings are not, however, consistent when respondents from healthcare organizations are compared to those in non-healthcare settings. We discuss differences, consider possible causes, and suggest future research.

INTRODUCTION

In this research, we consider how employee perceptions of their own and the organization's commitment to the "green" movement and employee perceptions that the organization has implemented perceptions of outcomes. We examine differences that may be occurring in healthcare vs. non-healthcare settings. A stimulus for our work has been widespread recent discussion of the need to shift attention to issues of *sustainability,* a concept that is central to the green movement.

THE GREEN MOVEMENT

Recent events, and especially rising gasoline prices, a depressed housing market, and instabilities in the world economy, have led to considerable discussion of the current status of the "green movement", a phenomenon that has appeared over the past 20 years (Stafford, 2003). It encompasses areas such as "green buying" by consumers (Mainieri, et al., 1997), Environmentally Preferable Purchasing (EPP) by government agencies and ultimately by

organizations in the private sector (Elwood & Case, 2000), Environmentally Benign Design and Manufacturing (EBDM) (Newsdesk, 2006), and Socially Responsible Investing (SRI) (Blodget, 2007). In each case, discussion has centered on purchasing, manufacturing, and investing in ways that are environmentally beneficial. Historically, emphasis has been placed on insuring that EPP products are attractive to consumers (Ottman, Stafford & Hartman, 2006; Dale, 2008) and insuring that organizations have sufficient incentives to behave in environmentally-constructive ways (Elwood & Case, 2000).

In contrast, a second stream in the literature has suggested that the "green movement" may be in decline. Specifically, one of the "Current Issues in the Greening of Industry" (July 2007) suggests that the current "new-found environmental ethic" may be somewhat ephemeral and that "… corporate greening could go bust" in ways analogous to other recent fad-like phenomena. Moreover, Stafford (2003) points out that "… green issues as a whole appear to be taking a back seat to concerns of terrorism, war, and the economy." In view of the current recession, these trends could quickly be exacerbated. However, Dale (2008) points out that, with soaring energy prices pushing up the price of mainstream goods, green products are becoming just as -- or even more -- affordable these days. Stafford also notes that concerns about oil could lead to a movement to reduce dependence on oil in the U.S., and thus foster this aspect of the green movement.

Environmental friendliness and sustainability are the major concerns of green products, green manufacturing and service, and green organizations (Liu & He, 2005). All of the green activities, such as reducing waste, using harmless materials, and providing organic food can be placed under the umbrella of greening. Providing a clean, ethical and safe environment to human beings and all creatures is the goal of green movement, and is one which potentially requires the efforts of all the people, industries and governments on the earth (Grewe 2002; Holden 2004; Patulny & Norris, 2005; Tiemstra, 2003).

ORGANIZATIONAL CULTURE AND SUSTAINABILITY

In this research, we also speculate that *organizational culture* may impact employee perceptions of the green movement and its importance to the organization and to them personally. Moreover, culture may impact perceptions about outcomes as well. Note, however, that the impacts between the culture and the perceptions may move in two directions. Specifically, as organizations become *greener*, we should see a move toward a more empowered, employee-centered, and customer-centered culture. Additionally, however, a culture that is supportive of the green movement should lead to better outcomes and, perhaps in part through self-selection, to employees who, themselves, are more supportive of the green movement.

Centering on quality practices, recent in-depth discussion by Zairi (2002) can illustrate what is being considered:

> The concept of sustainable development has been touted as a new planning agenda (Beatley & Manning, 1998). As such, it becomes a fundamental concept that should be an important aspect of all further policy developments (Loffler, 1998). Sustainable development is based on a perceived need to address environmental deterioration and to maintain the vital functions of natural systems for the well being of present and future generations. ***Sustainability*** is defined as 'the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance' (Zairi & Liburd 2001). This concept implies that ***sustainability*** is a means for an organization to maintain its competitiveness.

Quinn (2000) has a similar idea on ***sustainability***. He describes it as the development that meets present needs without compromising the ability of future generations to meet their own needs. Gladwin et al. (1995), on the other hand, define it as 'development, which meets the needs of the present, without compromising the ability of future organizations to meet their own needs'.

Total Quality Management (TQM) represents an integrative approach for the pursuit of customer satisfaction (Chin et al., 2001). However, facing intense pressure of global competition, organizations need to consider incorporating the idea of ***sustainability*** in TQM in order to sustain their competitive advantage and performance improvement. In addition, the interest of organizational survival, growth and prosperity has therefore got to be concerned with not just the present, but also the future. See also similar ideas by Hitchcock and Willard (2002), Jonker (2000), and McAdam and Leonard (2003).

What Differences May Exist in the Healthcare Setting?

There is widespread support of the premise that health care managers and executives are struggling to cope with environmental challenges in the healthcare industry (Sieveking & Wood, 1994; Dwore, et al., 1998; Smith, et al., 1998; Shewchuk, et al., 2005). Zuckerman's (2000) comments are typical of the discussion in the literature, in pointing out that it is the dynamic nature of the healthcare industry that leads organizations to struggle to survive in turbulent conditions. Moreover, Zuckerman notes that the management approaches used by many healthcare organizations continue to lag behind other businesses in similar industries.

Of special significance to this research, Rundle (2000) has recently suggested that the healthcare industry is falling behind in issues of management, particularly with respect to adopting and managing automation and technology. The implication is that managers and executives in healthcare, compared to their counterparts in other industries, do not have the business knowledge and skills to fully utilize the available automation and technology. Mecklenburg (2001) has recently made similar points when considering the steps health care is

taking with respect to preparing to exchange data in ways that will benefit patients. What is suggested may be that healthcare may be lagging behind at just the time when turbulence in the industry should be moving them toward the development of sophisticated sustainability systems. Is it possible that differences in the factors we have discussed could be underlying causes of any differences between healthcare and non-healthcare?

In this research, we consider how employee perceptions of their own and the organization's commitment to the "green" movement and employee perceptions that the organization has implemented perceptions of outcomes. We examine differences that may be occurring in healthcare vs. non-healthcare settings. In this study, we develop eight research questions to explore the possibilities.

Figure 1 Research Model

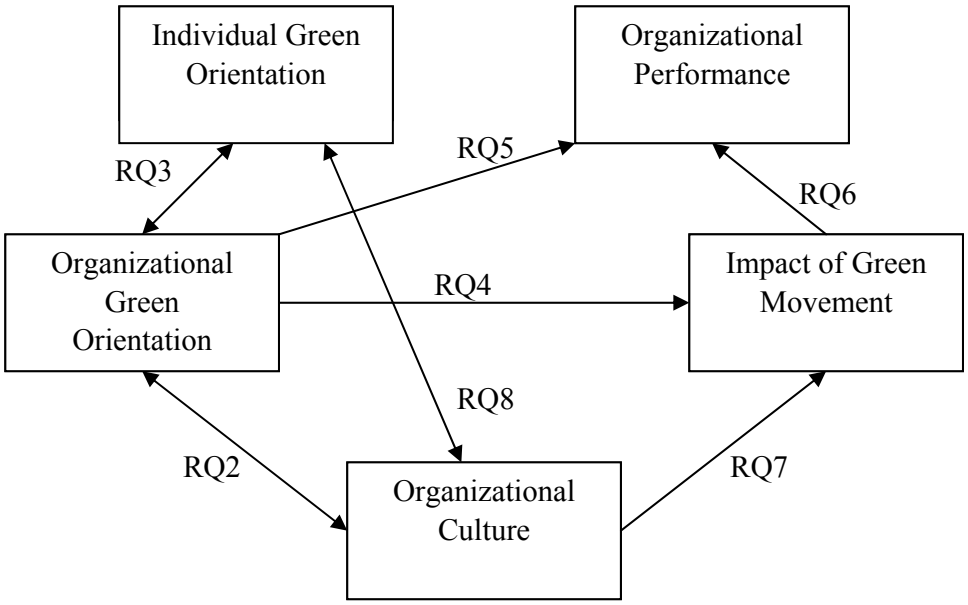

Figure 1 shows the linkages we expect and relates linkages to the corresponding research questions. Our first research question suggests that healthcare and non-healthcare organizations would have different levels of organizational green orientation, organizational culture, organizational performance, and impacts of the green movement (Research Question 1 labeled as RQ1 in Figure 1). We also believe that more organizations with more desirable organizational culture should be more supportive of the green movement (Research Question 2 labeled as RQ2 in Figure 1). Furthermore, employees' personal green orientation should be related to or affected by the green movement within the organization (Research Question 3 labeled as RQ3 in Figure 1). Additionally, as organizations become more green-oriented, the organization itself will be

seen as "doing better" in general and the impact of the green movement will be more positive (Research Questions 4 and 5 labeled as RQ4 and RQ5 in Figure 1). We also believe that as the organization is "doing better," the employees will perceive the impact of the green movement even better (Research Question 6 labeled as RQ6 in Figure 1). Finally, we expect that organizational culture is related to the impact of the green movement and will be shaped by employees' individual green orientation (Research Questions 7 and 8 labeled as RQ7 and RQ8 in Figure 1).

Research Question 1 *Healthcare and non-healthcare organizations will have different levels of organizational green orientation, organizational culture, organizational performance, and impacts of the green movement.*

Research Question 2 *Organizational Green Orientation is related to Organizational Culture.*

Research Question 3 *Organizational Green Orientation is related to Individual Green Orientation.*

Research Question 4 *Organizations that are described by employees as higher in Organizational Green Orientation will also report more positive feelings about the impact of the green movement.*

Research Question 5 *Organizations that are described by employees as higher in Organizational Green Orientation will also report more positive feelings about the organization's performance.*

Research Question 6 *Organizations that are described by employees as higher in Organizational Performance, they will also report more positive feelings about the impact of the green movement.*

Research Question 7 *Organizational Culture is related to employees' feelings about the impact of the green movement.*

Research Question 8 *Organizational Culture is related to Individual Green Orientation.*

METHODOLOGY

Subjects of the Current Study

Subjects in the sample were approximately 323 managers from a wide variety of industries in the South. There were approximately 83 managers who work in the healthcare industry and 124 managers who work in the non-healthcare industries (45 in utilities, 4 in financial services, 10 in high technology, 19 in government, 27 in retail, and 19 in education). Of the 83 healthcare managers, they were roughly 54.2 % male and 45.8% female with an average

age of 35.07 years (Table 1). These managers had an average of 16.99 years working experience with 9.28 years in management positions. 38.6% of the subjects are employed in a company that has more than 500 employees, 7.2% of the subjects work in a company that has 251 to 500 employees, 15.7% of the subjects work in a company that has 51 to 250 employees and 38.6% of the subjects work in a company that has less than 50 employees. Of the 124 non-healthcare managers, they were roughly 43.5 % male and 56.5% female with an average age of 44.90 years. These managers had an average of 22.77 years working experience with 11.64 years in management positions. 43.5% of the subjects are employed in a company that has more than 500 employees, 6.5% of the subjects work in a company that has 251 to 500 employees, 21.0% of the subjects work in a company that has 51 to 250 employees and 29.0% of the subjects work in a company that has less than 50 employees. Subjects responded to a survey asking about their perceptions and experiences about green movement, quality management, and organizational culture in their own firms. In this study, we will concentrate on the relationships among perceptions of support for the organizational green movement, organizational culture, organizational performance, and the impact of green movement.

Table 1: Subjects' Demographic Information

Industry of your organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	28	8.7	8.7	8.7
	Utilities	45	13.9	13.9	22.6
	Health Care	83	25.7	25.7	48.3
	Financial Services	4	1.2	1.2	49.5
	High Technology	10	3.1	3.1	52.6
	Government	19	5.9	5.9	58.5
	Retail	27	8.4	8.4	66.9
	Education	19	5.9	5.9	72.8
	Other	88	27.2	27.2	100.0
	Total	323	100.0	100.0	

Between-Subjects Factors

		Value Label	N
HC Organizations	1.00	Health-Care	81
	2.00	Non Health-Care	122

		Healthcare	Non-Healthcare
Gender	Male	45 (54.2%)	54 (43.5%)
	Female	38 (45.8%)	70 (56.5%)
	Valid N (list wise)	83 (100.0%)	124 (100.0%)
Number of Years	Working Experience	16.99	22.77
	Managerial Experience	9.28	11.64
	Valid N (list wise)	81	121
Number of Employees	Over 500	32 (38.6%)	54 (3.5%)
	251-500	6 (7.2%)	8 (6.5%)
	51-250	13 (15.7%)	26 (21.0%)
	Less than 50	32 (38.6%)	36 (29.0%)
	Valid N (list wise)	83 (100.0%)	124 (100.0%)

Instrument

Organizational Green Orientation

In this study, we developed nineteen survey questions to measure the Organizational Green Movement. Table 2 provides the items and shows the results of our factor analysis.

As Table 2 indicates, we obtained a three-factor solution with 66.644% of the variance explained in the case of the organizational green orientation items. We have labeled Factor 1 as "Green Leadership", Factor 2 as "Green Products/Services", and Factor 3 as "Green Workplace."

Individual Green Orientation

In this study, we developed twenty survey questions to measure the Individual Green Orientation. We obtained a three-factor solution with 51.903% of the variance explained in the case of the individual green orientation items. We have labeled Factor 1 as "Green Actions", Factor 2 as "Green Consciousness" and Factor 3 as "Green Belief." Table 3 provides the items and shows the results of our factor analysis.

Organizational Culture

Based on previous research (Hartman, Fok & Zee, 2009), we measured the Organizational Culture by constructing a series of paired opposite items which asked whether the organization's climate should be described as open vs. closed, soft vs. tough, competitive vs. collaborative, and the like. Table 4 below provides the items and shows the results of our factor

analysis. We obtained a two-factor solution in the case of the culture items and have labeled Factor 1 as "TQM Culture" and Factor 2 as "People-Friendly Culture." 52.63% of the variance was explained by these two factors.

Table 2: Factor Analysis on Organizational Green

Rotated Component Matrix [a]

	Component		
	1	2	3
Produce environmentally friendly goods and services	.222	.900	.054
Design environmentally friendly goods and services	.214	.900	.067
Reuse or refurbish a product's components	.247	.615	.257
Provide a safe and healthy workplace for employees	.108	.109	.841
Make ethical and socially responsible decisions	.169	.145	.717
Make an effort to preserve the natural environment	.680	.274	.277
Lead and support corporate responsibility activities	.606	.202	.261
Encourage employees to conserve energy/resources.	.725	.083	.242
Set goals to conserve energy/resources.	.848	.194	.108
Commit to be environmentally friendly at all levels	.806	.312	.082
Preserve employees' physical and emotional well-being	.355	.043	.690

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.796	43.597	43.597	4.796	43.597	43.597	3.046	27.693	27.693
2	1.447	13.157	56.754	1.447	13.157	56.754	2.291	20.828	48.521
3	1.088	9.890	66.644	1.088	9.890	66.644	1.994	18.123	66.644
4	.770	7.001	73.644						
5	.635	5.776	79.420						
6	.610	5.549	84.969						
7	.447	4.066	89.035						
8	.422	3.834	92.869						
9	.368	3.343	96.212						
10	.263	2.394	98.606						
11	.153	1.394	100.000						

Extraction Method: Principal Component Analysis.

Table 3: Factor Analysis on Individual Green Orientation

Rotated Component Matrix[a]

	Component		
	1	2	3
Recycle paper, plastic, or aluminum products	.239	.575	.303
Drive a hybrid or electric car	.683	.188	.060
Plant your own vegetable garden	.402	.129	.069
Buy organic food	.544	.134	.253
Bank at an eco-friendly bank	.633	.031	.056
Buy products based on the willingness to recycle old devices	.545	.274	.295
Run your home on renewable energy	.758	.180	-.062
The city or state should provide an ability to recycle	.186	.093	.710
It is inconvenient being "green"	-.012	-.036	-.731
You think of yourself as energy conscious	.125	.889	-.070
You think of yourself as eco-conscious	.271	.842	.108

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.505	31.862	31.862	3.505	31.862	31.862	2.378	21.622	21.622
2	1.164	10.584	42.447	1.164	10.584	42.447	2.017	18.341	39.962
3	1.040	9.457	51.903	1.040	9.457	51.903	1.314	11.941	51.903
4	.960	8.728	60.631						
5	.917	8.336	68.967						
6	.725	6.591	75.558						
7	.678	6.163	81.721						
8	.619	5.625	87.346						
9	.592	5.381	92.727						
10	.521	4.741	97.468						
11	.279	2.532	100.000						

Extraction Method: Principal Component Analysis.

Table 4: Factor Analysis on Organizational Culture

Rotated Component Matrix[a]

	Component	
	1	2
Soft	-.036	.478
Informal	.076	.713
Decentralized	.185	.568
Quality-oriented	.803	.074
Innovation-promoting	.867	-.033
Proactive	.834	.142
Collaborative	.006	.683

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.256	32.233	32.233	2.256	32.233	32.233	2.132	30.461	30.461
2	1.428	20.397	52.630	1.428	20.397	52.630	1.552	22.169	52.630
3	.977	13.951	66.581						
4	.788	11.257	77.838						
5	.706	10.087	87.926						
6	.505	7.219	95.145						
7	.340	4.855	100.000						

Extraction Method: Principal Component Analysis.

IMPACT OF GREEN MOVEMENT

The instruments included are items such as “Provide better products,” “Provide better services,” “Have better relationship with customers,” “Have better relationship with suppliers,” “Have better reputation,” “Provide better working environment,” “Increase profits,” “Reduce costs,” and “Improve productivity.” Factor analysis produced a two-factor solution and we named them “Strategic Benefits” and “Operational Benefits.” 82.184% of the variance was explained by these two factors. Table 5 below provides the items and shows the results of our factor analysis.

Table 5: Factor Analysis on Impact of Green Movement

Rotated Component Matrix[a]

	Component	
	1	2
Have better relationship with customers	.828	.374
Have better relationship with society at large	.892	.214
Have better reputation	.837	.295
Increase profits	.305	.871
Reduce costs	.267	.902
Have better relationship with suppliers	.803	.333
Improve productivity	.413	.815
Have better relationship with employees	.798	.399

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.523	69.034	69.034	5.523	69.034	69.034	3.796	47.454	47.454
2	1.052	13.150	82.184	1.052	13.150	82.184	2.778	34.731	82.184
3	.383	4.788	86.973						
4	.280	3.499	90.471						
5	.233	2.908	93.379						
6	.215	2.692	96.070						
7	.163	2.033	98.103						
8	.152	1.897	100.000						

Extraction Method: Principal Component Analysis.

Organizational Performance

The Organizational Performance items were primarily adapted from the Malcolm Baldridge National Quality Award outcome assessment measures. The Baldridge Awards are designed to identify organizations that are performing in an exceptional manner and include criteria for identifying excellence. We used the Baldridge criteria in the form of a scale which asks respondents to provide their perceptions about their organizations along Baldridge lines. The resulting scale has been used and reported in previous research (Hartman, Fok & Zee, 2009). The instrument included are items such as "Overall, my company is performing well," "Overall,

morale in my company is high," "Overall, I am satisfied with the use of technology in my company," and the like. Factor analysis in this study indicated that one factor was present. We named the factor as "Organizational Performance/Success."

RESULTS

Our first research question suggested that healthcare and non-healthcare organizations would have different levels of organizational and individual green orientation, organizational culture, organizational performance, and impact of green movement. As shown in Table 6, the MANOVA (Multivariate Analysis of Variance) results are significant with a p-value of .000, which implies that healthcare organizations were significantly different from non-healthcare organizations, and that subjects reported different levels of organizational and individual green orientation, organizational culture, organizational performance, and impacts of the green movement. Among the eleven factors, we found that "Green Products/Services", "Green Actions", and "Green Consciousness" are statistically significant at the levels of .019, .000, and .003, respectively. For "Green Products/Services", the mean factor score of non-healthcare organizations (0.1514456) is greater than that of healthcare organizations (-0.1867539). The results imply that non-healthcare organizations are more inclined to develop green products or services than healthcare organizations. For "Green Actions", the mean factor score of non-healthcare organizations (0.3218496) is greater than that of healthcare organizations (-0.2387005). For "Green Consciousness", the mean factor score of non-healthcare (0.1884967) is greater than that of healthcare organizations (-0.2440347). The results suggest that individuals in the non-healthcare organizations are perceived to have higher level of green practices and awareness than those in the healthcare organizations.

Our second research question examines the relationship between Organizational Green Orientation and Organizational Culture. Table 7 provides the results of our correlation analysis. We found only one pair of significant relationships in the healthcare organizations. "Green Workplace" has a significant correlation with "People-Friendly Culture" which implies that as healthcare organizations embrace culture that focuses on being soft, informal, and decentralized, they also are trying to develop a workplace that is perceived as environmental friendly by the employees.

Research Question 3 investigates the relationship between Organizational Green Orientation and Individual Green Orientation. We found two pairs of significant relationships in healthcare organizations and two pairs of significant relationships in non-healthcare organizations. The results are shown in Table 8. "Green Products/Services" has significant and positive correlations with both "Green Actions" and "Green Consciousness" at the 0.01 level in healthcare organizations. The relationships are positive and imply that healthcare organizations that produce more environmentally friendly goods and services will also report higher levels of green practices and green awareness. In non-healthcare organizations, "Green Leadership" has

significant and positive relationships with "Green Actions" and "Green Consciousness" at the 0.05 level. The relationships are all positive which imply non-healthcare organizations that are described by employees as higher in Green Leadership will also report more positive feelings about their own Individual Green Orientation. The findings strongly support the idea that employees' reported individual green orientation affects the organization's green movement and vice versa.

Table 6: Summary of MANOVA Results
Healthcare vs. Non-Healthcare Organizations

Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.022	.326[a]	13.000	189.000	.987
	Wilks' Lambda	.978	.326[a]	13.000	189.000	.987
	Hotelling's Trace	.022	.326[a]	13.000	189.000	.987
	Roy's Largest Root	.022	.326[a]	13.000	189.000	.987
HC_ind	Pillai's Trace	.207	3.791[a]	13.000	189.000	.000
	Wilks' Lambda	.793	3.791[a]	13.000	189.000	.000
	Hotelling's Trace	.261	3.791[a]	13.000	189.000	.000
	Roy's Largest Root	.261	3.791[a]	13.000	189.000	.000

a. Exact statistic

b. Design: Intercept+HC_ind

Dependent Variable	Significance
Green Leadership	.566
Green Products/Services	.019**
Green Workplace	.948
Green Actions	.000**
Green Consciousness	.003**
Green Belief	.952
TQM Culture	.200
People-Friendly Culture	.472
Strategic Benefits	.116
Operational Benefits	.093
Organizational Performance	.447
The F tests the effect of healthcare vs. non-healthcare organizations. This test is based on the linearly independent pairwise comparisons among the estimated marginal means. ** F test is significant at the 0.05 level.	

Table 7: Pearson's Correlation Matrix
Organizational Green Orientation, Individual Green Orientation,
Impact of Green Movement, and Organizational Performance
(RQ2 to RQ5)

	Green Actions	Green Consciousness	Green Belief	TQM Culture	People-Friendly Culture	Strategic Benefits	Operational Benefits	Organizational Performance
Healthcare Organizations								
Green Leadership	NS	NS	NS	NS	NS	NS	.228*	.217*
Green Products/Services	.290**	.370**	NS	NS	NS	.446**	.223*	NS
Green Workplace	NS	NS	NS	NS	.242*	NS	NS	NS
Non-Healthcare Organizations								
Green Leadership	.202*	.204*	NS	NS	NS	NS	.208*	NS
Green Products/Services	NS	NS	NS	NS	NS	.233**	NS	NS
Green Workplace	NS	NS	NS	NS	NS	NS	NS	NS

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
NS = not significant.

Research Question 4 suggested that organizations with higher level of green orientation would be reported by the employees to have more positive feeling about the impact of the green movement. We found three pairs of significant relationships in healthcare organizations and two pairs of significant relationships in non-healthcare organizations. The results are shown in Table 7. "Green Leadership" has significant and positive correlations with "Operational Benefits" in both healthcare and non-healthcare organizations implying that green leadership within an organization leads to organizational efficiency *and* effectiveness. "Green Products/Services" has significant and positive correlations with "Strategic Benefits" and "Operational Benefits" in healthcare organizations; "Green Products/Services" has significant and positive correlation with "Strategic Benefits" in non-healthcare organizations. The results support the premise that when healthcare organizations develop "green" products/services or use "green" material in the production, show more concern with avoiding negative consequences of not being green, and help their employees at all levels to be more green-oriented, the overall impact of these green initiatives is perceived to be more positive by the employees. Non-healthcare organizations only show one pair of positive relationships between "Green Products/Services" and "Strategic Benefits." While this finding is similar to that in healthcare organizations, the lack of other significant findings suggests weaker perceived relationships among these constructs in non-healthcare organizations.

Research Question 5 suggested that organizations with higher level of green orientation would have received more positive feelings about the organization's performance. The results are shown in Table 7. Only one pair of significant relationships is found in the healthcare organizations. The relationship between "Green Leadership" and "Organizational Performance/Success" is significant at the 0.05 level. The relationship is positive which implies that as the organizations show more concern in helping their employees at all levels to be more green-oriented, and pay more attention to safety concerns, the organizational performance is perceived by the employees to be higher.

Research Question 6 suggested that organizations with higher level of organizational performance would be reported by the employees to have more positive feeling about the impact of the green movement. As shown in Table 8, we found two pairs of significant relationships in healthcare organizations. Two factors ("Strategic Benefits" and "Operational Benefits") of Impact of Green Movement and "Organizational Performance/Success" have significant correlations at the 0.01 and 0.05 level, respectively. The relationships are positive and imply that healthcare organizations with higher levels of performance would also be reported by their employees to have positive feelings about the impact of the green movement. There is no significant relationship between "Impact of Green Movement" and "Organizational Performance" in non-healthcare organizations, implying that employees in non-healthcare organizations do not see a relationship.

Table 8: Pearson's Correlation Matrix
Impact of Green Movement, Organizational Culture, and Organizational Performance
(RQ6 and RQ7)

Healthcare Organizations			
	TQM Culture	People-Friendly Culture	Organizational Performance
Strategic Benefits	-.454**	-.329**	.310**
Operational Benefits	-.258*	NS	.233*
Non-Healthcare Organizations			
	TQM Culture	People-Friendly Culture	Organizational Performance
Strategic Benefits	NS	NS	NS
Operational Benefits	NS	-.204*	NS

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
NS = not significant.

Our seventh research question examines the relationship between Organizational Culture and Impact of Green Movement. We found three pairs of significant relationships in healthcare organizations. "TQM Culture" has significant correlations with "Strategic Benefits" and "Operational Benefits" and "People-Friendly Culture" has a significant correlation with "Strategic Benefits" in the healthcare organizations. The findings indicate that as the organizational cultures are more green-oriented and employee-friendly; the employees see more positive impacts from the green movement. Only one pair of significant relationships in non-healthcare organizations is found. "People-Friendly Culture" has a significant relationship with "Operational Benefits," implying that these organizations do believe that the people-friendly culture does provide operational benefits, such as increase profits, reduce costs, or improve productivity.

Research Question 8 investigates the relationship between Organizational Culture and Individual Green Orientation. The results are not significant which implies organizational culture does not have significant impact on employees' view of being green at a personal level in healthcare and non-healthcare organizations.

DISCUSSION AND CONCLUSIONS

In this research, we examine whether there are differences between healthcare and non-healthcare organizations in employee perceptions of and reactions to the "green movement." Our MANOVA results found significant differences between healthcare and non-healthcare in three aspects: Green Products/Services, Green Actions, and Green Consciousness. In all three, non-healthcare organizations had significantly higher scores, indicating that non-healthcare employees see their organizations as doing *better* in these areas.

We next examined the linkages among Individual Green Orientation, Organizational Performance, Impact of the Green Movement, Organizational Culture, and Organizational Green Orientation, as show in Figure 1, for healthcare and non-healthcare organizations. In general, patterns of relationships were similar for healthcare and non-healthcare and in several cases, those in healthcare saw *more* relationships, suggesting, perhaps, that when healthcare organizations *do* embrace the green movement, employees recognize their concerns and react positively.

Are healthcare organizations less supportive of the green movement than non-healthcare organizations? On a superficial level, at least, organizations with cultures, which would be expected to emphasize care and concern, would also be expected to be supportive of the green movement. Study measuring concrete organizational actions - rather than perceptions could be useful in supporting whether differences are *real.* Alternatively, healthcare organizations may be concerned with the green movement but less effective than non-healthcare in communicating their concerns to the workforce. If this is the case, and given the positive perceptions in

healthcare organizations which are perceived to support the green movement, there should be a real incentive for healthcare organizations to convey their message more strongly. Where study finds no concrete differences, this possibility could be examined.

This research has shown a disconnect between healthcare and non-healthcare organizations in employee perceptions about the organization and the green movement. We have considered several explanations for the differences and feel that future research will be needed to develop understanding of what is occurring.

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ROLE OF RACE IN INFLUENCING SMOKERS' ATTITUDES AND BEHAVIOR: AN EXPLORATIVE STUDY FOR AFRICAN-AMERICAN AND WHITE ADOLESCENTS

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ABSTRACT

Cigarette smoking, a priority public policy issue, calls for intensive research to understand the phenomena that underlies the increasing level of smoking among adolescents. A much ignored variable in this area of research – race - is actively being considered in health literature. This paper explores the affect of race on smoking, in addition, to the role of market variables viz. cigarette purchases by underage smokers using structural equation modeling. A direct affect of race on smoking is observed, although a weak indirect effect is reported. African-American and white adolescents respond differently to difficulty in cigarette purchase. Further research to examine the affect of race in greater detail is warranted.

INTRODUCTION

Cigarette smoking, a common form of tobacco consumption, is a well-known serious behavioral concern across the world, and the single most preventable cause morbidity and mortality (USDHHS). In addition to these health costs, smoking also carries with it, high social costs (e.g., loss of relationships), and high economic costs (e.g., reduction in labor productivity), which is known to afflict a young smoker to a greater extent than an older smoker. A young individual who starts to smoke early in life, is less likely give-up smoking (e.g., Pechmann and Ratneshwar 1994; Weinstein 2001) because the addictive powers of the nicotine consumed, the core ingredient in cigarettes, builds up over the lifetime of a smoker.

Comprehensive state and federal efforts, although, successful in reducing the smoking rates among older adults who quit in fear of susceptibility to life-threatening diseases such as lung cancer, have had only a limited influence on underage smokers (12-17 year olds). Even though, adolescents are usually as much aware as the older adults of the health risks associated with smoking, they invariably suffer from a positivity-bias i.e., the young adolescents believe that they are immune to the risks of smoking ("It can't happen to me"). Furthermore, they 'decide' that they will quit smoking before the habit 'gets' them. Unfortunately, this rarely happens.

Previous research has shown that of all appeals to reduce and deter adolescents from smoking, the ones that emphasize the social costs in terms of loss of popularity or loss of social relationships when one smokes, are most likely to generate anti-smoking attitudes among adolescents. Consequently, most messages directed towards the young emphasize and urge the young to rise above the influence of peers who smoke, and to not be led away by the perception that smoking makes one attractive and popular as intended by the tobacco companies. Despite concentrated efforts in this direction, the age at initiation of smoking has been reducing over the years. This calls for future intensive research to strengthen and enhance effectiveness of existing smoking prevention and control initiatives, to understand the complex phenomenon that underlies underage smoking, and to identify new variables that could potentially influence the young to smoke (e.g., Gene and Pederson 2002).

Race is one such construct that could provide academicians more insight on the phenomenon that influences adolescents' attitudes and behavior towards smoking. Race as a factor has attracted much scholarly debate in health-related research. Proponents of the "race as a factor" urge the need to re-look at race as a factor in theoretical studies as opposed to merely considering race as a covariate. At present, most theoretical studies that seek to identify predictors of smoking consider race as merely a covariate (e.g., Valente, Unger and Anderson 2002). However, the widening gap in smoking prevalence and initiation across different races call for studying race as an independent predictor. Greisler and Kandler (1998), for example, report that Whites are more likely to be smokers in comparison to other ethnic groups. Furthermore, biological evidence shows that, nicotine, the core ingredient in cigarettes, breaks down differently in African-Americans as opposed to Whites could partially explain the lower consumption rate among African-Americans.

This paper is an explorative attempt to theoretically assess the direct and indirect influence of race on attitudes towards the risky behavior of smoking. If indeed, race is an important variable, including race as a factor while planning smoking control programs, could help improve the efficiency of smoking prevention and control. This research paper examines whether after controlling for demographic (excluding race), economic variables, and attitudes towards smoking, does race have a direct effect on smoking initiation rates, and smoking consumption rates? If the affect of race on smoking prevalence rate is indirect, say via attitudes towards smoking (and therefore, attitude towards risky behavior), then how strong would the effect be for African-Americans (the group that report to have the lowest smoking consumption rate) *versus* Whites (the group that report to have the highest smoking consumption rate)?

CONCEPTUALIZING RACE AS A PREDICTOR

Defining Race

Race is generally defined as "a social rather than a biological category referring to social groups "that share cultural heritage and ancestry "that are forged by oppressive systems of race relations justified by ideology" (Phillips and Drevdahl 2003). Recently, in 2002, the influence of race has gained considerable attention in public health and medical discourse (Phillips et al. 2003), although, the 'discovery' of its role in health literature is not recent. Interest in the role of race in health-related issues has waxed and waned since 1962.

While the sociological perceptive that race as a factor, indeed, is an interesting and rich dimension, to understand the linkages between the smoking behavior and an individual's decision to smoke, the complexity of the construct of race renders its inclusion in academic studies, a subject of considerable debate. The interplay of the embedded influences viz.; societal, cultural, historical, economic and educational on race make classification of individuals based on race a highly heterogeneous group. It may, therefore, be hard to tease apart the effects these different influence, and isolate an 'uncontaminated' race effect on individuals' attitudes and behavior.

At a preliminary level, racial influences on smoking may be reflected in individualistic societies (the US), where a higher number of smoking adolescents are reported in comparison to collectivistic societies, where rigid social norms deter individuals from smoking. Some theoretical research directs us to further investigate the role of race. For example, Griesler et al. (1998) report in their multivariate analysis of smoking behavior and attitude that Hispanics, and African-American adolescents are disproportionately prone to higher risks to smoking when compared with the white adolescents. However, a single factor, viz. the influence of mother's smoking behavior, was strong enough to render Whites more susceptible to smoking consumption in comparison to the Hispanic and Asian-American adolescents. This suggests that there exist certain sociological predictors that need to be examined, to address the adolescents' smoking concerns. A number of empirical studies also suggest the race may be a critical predictor. Philips et al. (1996) emphasize that the factors underling the ethnic differences are poorly understood, and urges consideration of race as a crucial predictor in understanding persistence of smoking among adolescents.

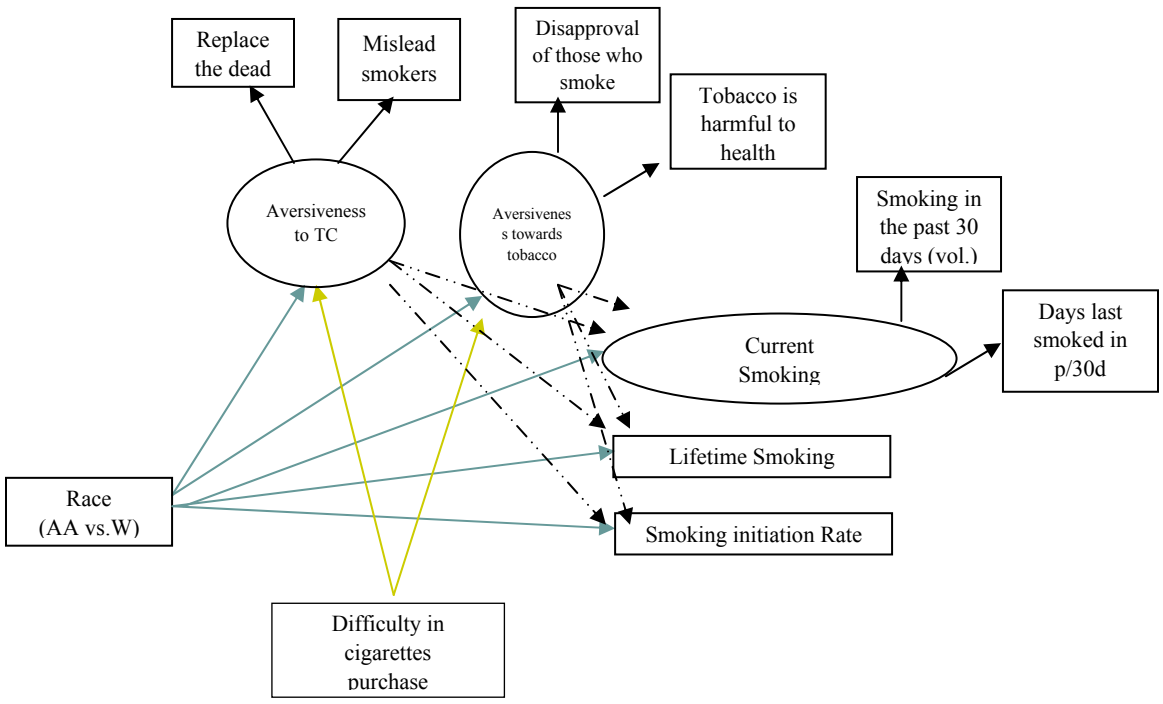
In this background, this paper hopes to bridge the gap between empirical studies that increasingly report widening racial differences in smoking behavior and theoretical studies that treat race as merely a secondary variable. This paper develops a model to assess the role of race in influencing adolescents' attitudes towards smoking and finally in determining adolescents' smoking behavior among African-American and Whites.

This study does not consider other racial groups, namely Hispanic and Asian-Americans, because empirical reports suggest that whites are the highest smoking group among adolescents,

while African-Americans are the lowest smoking consumption group. Therefore, this paper, at an initial exploratory level investigates the effect of race on groups that exhibit substantially different smoking behaviors. At the same time, secret tobacco reports revealed that African-Americans were increasingly being targeted by the tobacco companies, therefore it would be interesting to see how attitudes towards risky behaviors could be influenced by increased advertising by the tobacco firms. As opposed to African-Americans, and Whites, the immigrant groups (Hispanics, Asian-Americans), are highly heterogeneous in demographic variables other than race. It would, therefore, be hard to draw any conclusions for immigrant populations. For instance, individuals who come from China and India (to the US) are classified as Asians; however, there are considerable heterogeneity between a Chinese and Indian.

In sum, this paper considers race as an antecedent variable that directly influences smoking (i.e., age at initiation and smoking consumption rates) as well as indirectly predicts smoking behavior by influencing adolescents' attitudes towards the risky behavior of smoking of African-American and white adolescents (see figure 1).

Figure 1: Direct and Indirect Influence of Race on Smoking : Structural Model



HYPOTHESES

Viner, Haines, Head, Bhui, Taylor , Stansfeld , Hillier , and Booy (2006) find in their study conducted with early adolescents in that ethnicity, independent of religiosity and the country-of-origin, can predict individual's smoking behavior. Further, empirical and statistical analysis has shown race influences smoking behavior. For example, Perez-Stable and Posner (1998) investigated whether the hypothesized difference in attitudes and beliefs between Latino and non-Latino white smokers between the age group of 18-65 years in San Francisco, California were independent of traditionally considered significant variables such as formal education. Stable et al. (1998) suggest that racial differences appear to drive attitudes towards risky behavior. The first hypothesis of this paper tests the generally acclaimed influence of race on smoking behavior:

Hypothesis 1(Replicating): Being an African-American or a White adolescent would directly influence the (i) age at initiation of smoking, (ii) smoking current consumption rate, and (iii) lifetime smoking of an adolescent who smokes, after controlling for the current age and gender of the adolescent.

His paper does not propose any directional hypothesis for the direct effect of race on smoking in African-American and White adolescents because the paper is primarily exploratory in nature. In general, empirical evidence suggests that the lower smoking rates observed in African-Americans can be attributed to the strong inclination to participate in church activities (e.g., Niver 2006). At the same time, some researchers believe that the lower consumption rates reported could be a manifestation of self-selectivity bias (higher school-drop out rates among African-Americans), and false self-reports. An explanation for the lower smoking rates among white adolescents is largely explained in terms of higher family income. However, studies are now increasingly reporting whites to exhibit the highest smoking consumption rate. This is explained by some researchers to be a manifestation of the parental smoking, and strong peer influence (e.g., Martin, Cummings and Coates 1990).

Even though, differences in smoking behavior persist among older and younger individuals, evidence suggests that there is limited difference in the awareness of the health risks associated with smoking between the two groups (Pechmann et al. 1994). Health risk behaviors, in academic literature, are defined to include behaviors such has carrying weapons, not using helmets fighting and susceptibility to substance abuse (Ellickson 2001). The adoption of one or more of such risky behaviors by adolescents is known to produce severe adverse long-term impact on health (cf. Viner et al. 2006). Common factors known to influence attitude towards risky behavior are socio-economic status, and poor mental health. Viner et al. (2006) suggest that patterns of vulnerability and protection to such risky behaviors may be related to cultural and ethnic groups. For example, adolescent sensitivity to behavioral risks is likely to be protected through a range of factors such as the nature of parental relationship or family connectedness,

self-identity conflict, social support (e.g., Viner et al. 2006). Ellickson (2002) suggest that the belief that smoking improves one's self-image predicts smoking among whites but not among African-Americans.

At present, little work has been done to examine the patterns of vulnerability to risky behaviors in the backdrop of ethnic and racial affiliations (e.g., Viner et al. 2006). In order to build on this limited research, the second hypothesis posits that racial membership is likely one's attitudes towards the risks associated with tobacco, cigarette companies that make available the means to smoke through the influence of race on attitudes towards vulnerability and protectiveness towards risky behavior.

Hypothesis 2a: Attitudes towards the risky behavior of tobacco consumption in the form of cigarette smoking is likely to mediate the influence of racial membership on (i) age at initiation of smoking, and (ii) smoking consumption rate, and (iii) lifetime smoking of an adolescent who smoke, after controlling for the current age, and gender of the adolescent.

Hypothesis 2b: Attitudes towards tobacco companies who make available the means to engage in risky behavior is likely to mediate the influence of racial membership on adolescents (i) age at initiation of smoking, (ii) smoking consumption rate, and (iii) lifetime smoking of an adolescent who smokes, after controlling for the current age, and gender of the adolescent.

In addition to the attitudinal factors that have been known to influence adolescents smoking behavior, the ease of purchase of cigarettes is also likely to influence the risky attitudes. The US law prohibits retail sale of cigarettes to the young, without proof of age. This restriction is expected to enhance individuals risk perceptions towards smoking behavior (Center for Disease Prevention and Control). Evidence, however, suggests that the restrictions on sale of cigarettes are not equally followed across the country. In 1999, among current underage smokers (younger than 18 years), 23.5% usually purchased their cigarettes in a store, and were not asked to show proof of age (e.g., Jones, Sharp, Husten, and Crossett 2002). In addition, females reported significantly more likely than males to report they had not been asked to show proof of age. Sale of cigarettes to underage smokers is expected to be more restricted in high income than in low-income neighborhoods (e.g., Jones et al. 2002). Some racial differences in the sale of cigarettes is also expected across races, although, there has been no research to address this.

Hypothesis 3: Difficulty in the purchasing cigarettes (considered illegal for underage smokers) will enhance the perception of riskiness of the smoking behavior, and is likely to (i) increase the age at initiation of smoking, and (ii) reduce smoking consumption after controlling for the current age, and gender of the adolescent.

This hypothesis is limited in assessing the accessibility of cigarettes among adolescents because access to cigarettes is not restricted to store purchases alone. Other means to get cigarettes also stealing from others who smoke, internet purchases, or asking someone else to purchase from the store. Jones et al. (2006) report that reliance on buying cigarettes in a store or

giving someone else money to buy cigarettes has increased, while the borrowing of cigarettes decreased. In addition, the pervasiveness of internet, allows purchases of cheap cigarettes on the adolescents with complete confidentiality. For example, there has been a significant increase in number of tobacco products seen, by adolescents, on the internet from 33.5% (1999) to 39.2% (2000).

METHOD

Data

The research question is addressed by making use of data from, the American Legacy Foundation (ALF), under the aegis by the Master Settlement Agreement between the state attorneys general and the tobacco companies, in collaboration with the Centers for Disease Prevention and Control (CDC) is geared to address the concerns of underage smokers. In line with its goals, the ALF has developed a series of surveys to measure the tobacco-related beliefs, attitudes and behavior of adolescents across the country. The National Youth Tobacco Survey (NYTS), first administered in 1999, is one such nation-wide survey of middle and high school students. The survey is self-administered, confidential and cross-sectional. The NYTS database is a rich source of information comprising adolescent's attitudes and behavior towards smoking, given that getting permissions from schools and from parents involves a cumbersome and time-consuming process. The information in the data may be used to study the underlying adolescents' beliefs about smoking given their smoking behaviors, and therefore such information can be used to specifically plan and develop control programs for at risk adolescents.

Middle and high school students are randomly selected from the sample of public schools that consented to participate in the survey. The selection of the consenting schools, and grades within these schools was random. The survey, administered after receiving consent from respondents; parents, comprised an 83-item questionnaire on issues relating to the respondents attitudes towards smoking (tobacco companies, and tobacco), past smoking behavior. The present study uses data for the year 2009, after which the survey was conducted once every two years.

Measures

Independent variable

Independent variable (i) Self-reported race: key antecedent in the proposed model. Respondents were require to indicate "*What best describes you? (i) American Indian, (b)*

Hispanic, (iii) African-American or Black, (iv) Asian Pacific Islander, (v) Asian American,(vi) White".

Dependent Variables:

Three distinct dependent variables are considered: (i) Smoking initiation rate, (ii) current smoking consumption rate, and (iii) lifetime smoking. The significance of considering three separate measures is best illustrated in the difference in the smoking behavior between African-Americans and white adolescents. Smoking initiation rate is measured as "*How old were you when you first smoked (even if it was a puff or two)? Anchor points: Younger than 7 years, and Older than 17 years).* Current smoking rates, defined to measure the volume consumption over the last 30 days (see table 2 for operationalization), and Lifetime smoking, defined as the total number of cigarette consumption till date, was measured as "*How many cigarettes on the average have you had till date? Anchor points: A puff or two, and More than 100 packs).*

African-Americans have reported to have the lowest age at initiation in comparison to Whites, and African-Americans also report to have the lowest smoking consumption rate, and lifetime smoking rate. The three dependent measures are expected to be correlated with one another, and emphasize different aspects of an individual's smoking behavior. The average age of initiation of smoking is likely to influence the smoking consumption of an individual (whether represented as lifetime smoking consumption or current smoking levels). Lower the age at initiation of smoking, higher is the expected smoking consumption rate (current/ lifetime smoking rate), unless there is a high smoking quitting rate. Having a lower initiation rate may indicate a heightened desire to experiment (with risk), while lower current consumption and lifetime consumption may emphasize the need to confine to social norms. Therefore, evaluating smoking behavior by solely considering one of three indicators could, therefore, be grossly misleading.. Cronbach alpha's (See table 2) for the latent constructs were computed for all the observed variables that represent a latent construct and have a reasonably good reliability, and are over the recommended level of 0.6 (e.g., Nunnally 1978).

Mediator:

The correlation between the identified distinct latent constructs for averisveness to risky behavior have a very low correlation (r= -0.186) which indicates that the construct of risky behavior in this paper, is represented to be a second-order constructs, with two orthogonal indicators (that is, aversiveness to tobacco companies, and aversiveness to tobacco). Other potential indicators, as guided by theory, include aversiveness to risky behavior as represented by parental dialogue/ peers (e.g., Griesler et al. 1997). These indicators although critical for a more complete representation of the proposed mediating construct are, however, not included in the present study due to lack of data.

Control Variables

Demographic variables namely gender, and age are the integral control variables. Also, since age at initiation and lifetime smoking were dependent measures that were conditional on the current age of the respondent, controlling for age was imperative.

Data Analyses

The data analyses for the present study were conducted in two phases. First, the NYTS database for a total of 22,679 data points was filtered for self-reported ethnicity by the adolescents. Only African-Americans and White respondents were included in the analysis. Further, these respondents were filtered on the basis of their smoking status i.e., those who reported to have smoked in the past, even if it is a puff or two, were included in the analysis. This definition of being a smoker confers with the Center of Disease Prevention and Control's definition.

A descriptive analysis of the selected data points was then conducted for all the variables and are presented in table 1. Missing data analysis revealed that there was less than 1% of missing values (i.e., 49 data points out of a total 6,898 points in the filtered dataset). The means and intercepts values in the AMOS package was defined to allow for the treatment of the missing data. It is assumed that the missing values do not affect results of the data analyses.

Table 1: Descriptive Statistics

	African-Americans	Whites
Age	14.3 years	13.7 years
Average Age at First Cigarette (even if a puff or two)	13 years	14 years

Table 2: Factor Loadings for Latent Constructs

Latent Construct and corresponding items	
Aversiveness to Tobacco Companies (Cronbach Alpha= 0.69)	
(i) TC target teens to replace smokers who die?	0.641
(ii) TC try to mislead the young?	0.826
Aversivesness to Tobacco (Cronbach Alpha= 0.72)	
(i) Do you disapprove smoking > 1 pack/day?	0.594
(ii) Do you think cigarette smoking is harmful?	0.676
Current Smoking (Cronbach Alpha=0.91)	
(I) In the past 30 days, how many days do you smoke?	0.926
(ii) Number of cigarettes smoked/day in the past 30 days?	0.918

A confirmatory factory analysis was done guided by the exploratory factor analysis was conducted to identify the key distinct latent constructs viz. aversiveness towards smoking, aversiveness towards tobacco, and current smoking rate - to represent adolescents' attitudes towards the risky behavior of smoking – the dependent variables in the proposed model. Another confirmatory analysis was conducted to define the current smoking status. The factor loadings for the latent measures are presented in table 2.

RESULTS AND DISCUSSION

The available survey data was used to assess the fit in the proposed conceptual model using structural equation modeling package AMOS version 4.0. The model-fitting was carried out in two distinct phases: one, the measurement model was first evaluated independently for the identified latent constructs. Byrne (2001) recommends that the testing of measurement model is critical to identify any inadequacies proper to the consideration of the full model. Measurement invariance tests did not reveal any differences in the constructs of aversiveness to risky behavior, and smoking consumption rate across the racial groups. Therefore, the unrestricted constructs are used for the analyses. In the second phase, the full causal model was considered with the simultaneous testing of the measurement and structural model. The goodness-of-fit were evaluated on the basis of the conventional indicators such as AGFI , and NFI. However, the chi-square value, known to be extremely sensitive to the sheer sample size (Byrne 2001), was not used as a guide in this analysis that comprised a total of 6,898 points after the filtering procedure noted above.

An examination of the best-fitting structural equation model (see table 3).

Table 3: Goodness-of-Fit indices

	Chi-square	df	NFI	RFI	RMSEA	Hoetler's (at 0.05)
Full causal model	12531.8414	15	0.993	0.986	0.066	310

The p-value or the critical ratio is not considered important because the high sample size renders all the standard coefficients significant. The analysis of the results is, therefore, carried out considering the size of the regression coefficient.

RMSEA is 0.066 which is lower than the conventional 0.08. In addition, the Hoetler's index is 310, also higher than the conventional requirement of 300. The NFI (0.9989) and the AGFI is 0.994 are also higher than the recommended level of 0.9.

Consistent with empirical findings, gender differences among adolescents in the structural equation model were not found to be significant in influencing the smoking attitudes and behavior across the racial groups.

Table 4: Standardized Regression Coefficients		
Key Independent Variable	Dependent Variables	Standard Regression Weights
Race	Aversiveness to tobacco companies	-0.044
	Aversiveness to Tobacco	-0.140
Aversiveness to tobacco companies	Current smoking	-0.022
Aversiveness to Tobacco	Current smoking	-0.140
Aversiveness to Tobacco	Lifetime smoking	-.122
Difficulty in purchase of cigarettes	Aversiveness to tobacco companies	-0.178
Difficulty in purchase of cigarettes	Current smoking	0.349
Difficulty in purchase of cigarettes	Lifetime smoking	0.271
Race (African-American coded as 1)	Smoking initiation rate	-0.051
	Current Smoking	-0.208
	Lifetime smoking	0.021

Hypothesis 1 (partially supported): Race has a direct effect on smoking consumption, although weak effects are observed. The best-fitting model indicates that African-Americans have reported to have a lower smoking consumption rate when compared to the White adolescents. However, the direction of the effects is in line with the empirical reports on smoking initiation rate and consumption rate by race, with the exception of directional results for lifetime smoking (measured as the total number of cigarettes smoked in the entire life of the smoker). The model reports a positive, although very weak, influence of race on higher current smoking (0.021), inconsistent to empirical findings. However, the weak effect may be considered to be insignificant. Further, the model results are largely in line with empirical findings: (i) Being an African-American, one is more likely to have lower lifetime smoking (-0.208)., and (ii) Being an African-American, one is likely to have a lower initiation rate (-0.050).

Hypothesis 2 (Not supported) proposed the effect of race on smoking consumption as mediated by the attitudes towards risky behavior. The results indicate that no significant results were obtained, or directional support was observed in support of this hypothesis. The results indicate that being an African American is less likely to be aversive to tobacco firms (standardized regression coefficient at -0.044) as well as less aversive to tobacco (standardized regression coefficient at -0.140) when compared to a white. Further, the indirect affect of race on smoking consumption is much lower than the direct affect on smoking (see, table 4).

However, the following conclusions may be made: (a) adolescents – both African-Americans and whites- are less likely to be influenced by control programs that advocate that tobacco companies are manipulative in comparison to that make available the means to smoke. This is reflected in the low (and close to zero) regression coefficient of race regression

coefficient for affect on aversiveness to tobacco companies. Given that tobacco companies are increasingly targeting the African-Americans, this may be good news for smoking control activists.

Hypothesis 3 predicted that the harder it was for the adolescent to purchase cigarettes the stronger would be the aversiveness towards tobacco and tobacco companies. The results of the analysis indicate, contrary to the expectations, that the harder it is to purchase a cigarette the less aversive an African-American adolescent is towards smoking (-0.178). The impact of difficulty on the purchase of cigarettes for African-American adolescents could consequently be expected to be reflected in their higher lifetime smoking (0.271) and current smoking (0.349). This effect may be explained in terms of Brehm's reactance theory (Brehm 1996) i.e., the more one is restricted from doing a particular task, the more likely one is to do it. Such reactance forces could be stronger in African-Americans than in whites because the historical influence of racism and discrimination encourage them to revolt against restrictions that are put on them.

IMPLICATIONS

Studies report that the stricter enforcement of tobacco access laws to prevent easy access to cigarettes. However, at the same time, caution needs to be made while building these restrictions because these could be counterproductive. For example, the model shows that African-American adolescents in face of difficult in purchase of cigarettes are more likely to smoke. Perhaps, the educational programs designed in school should also educate the students the purpose of the restrictions so that the adolescents are not unduly interested in purchasing cigarettes only because its access is restricted. Further, it may be concluded that there is need to emphasize the risks of tobacco instead of the risky behavior of the tobacco firms (given the weak influence of race on averisveness to tobacco companies). This could help in planning expenditure on anti-smoking campaigns that increasingly spend money in ads that advocate the manipulative actions of tobacco firms (American Legacy Foundation).

Limitations and Future Directions

The findings of this paper suffer from at least six limitations: First, as discussed earlier in the text of this paper, race as a construct brings with it the embedded influence of educational, societal and income status of an individual/ family. Therefore, merely using a self-reported one-item classification of race may not capture the desired 'pure' affect of race. Second, the NYTS although captures integral and rich information on adolescents' attitudes towards smoking all information recorded is in form of self-reports. The absence of any biochemical verification (such as the test of carbon monoxide of expired air) suggests that the results of the study could have been biased by social desirability norms (e.g., Wills and Cleary, 1997). Social desirability bias may induce the respondents to report lower smoking consumption rates or to wrongly report

their smoking status. However, this concern may not influence the results un-proportionally by race. Wills et al. (1997) compared the validity of the self-reports by different ethnic groups for urban adolescents in the 7th, 8th, and the 9th grade, by testing the carbon monoxide of expired air in addition to recording the self-reports, and reported that validity of the self-report was comparable across ethnicities. Third, this study considers cigarette smoking behaviors only. Recently an increase in the consumption of cigars, pipes, kerets, and bidis - all close cousins of cigarettes has been observed. To this extend, the findings underestimate the effect of race on smoking attitudes and behaviors. Fourth, the lower smoking rate among African-Americans could be a manifestation of sample selectivity i.e., the higher school drop-out rates are noted among the African-Americans. Those who are out of the school systems, and therefore from the database used in this study, could be smokers. Therefore, there may be an underestimation in the smoking rate among African-Americans. Fifth, the testing of the effect of race on smoking attitudes and consumption, is represented by two distinct but weak latent constructs. Ideally, inclusion of familial data that is likely to initiate protective attitudes towards smoking would best represent the influence of race in attitudes towards risky behaviors. However, given that such information is not captured in the survey, reanalysis of the proposed model with more representative constructs is proposed. Sixth, the conceptual model is designed for only smoking adolescents. Future research could compare and contrast the negative attitudes towards risks of smokers with that of non-smokers. The nature of the relationships between smoking statuses (smoker vs. non-smoker) could provide some insight into the difference by which smokers and nonsmokers view the risky behavior of smoking. In similar vein, research could investigate the difference in the early experimenters and more committed smokers differ from one another.

CONCLUSIONS

This research explores the role of race on smoking attitudes and behaviors among adolescents. In the US, that enjoys tremendous racial diversity, the increasing substance abuse among the young, calls for urgent attention of policy makers and researchers. Although, the influence of race on such risky behavior is questioned by some researchers, given the complexity of the construct of race, an exploratory study to examine the potential influence of race is warranted. This current paper finds support for direct influence of race on smoking, however, the indirect affect is not supported for, even though some theoretical support exists for this. The interplay of educational, income and societal factors on the construct of race may partially explain of the reduced and uncontaminated influence of race on smoking behavior. There is need for further integration of sociological aspects such as race with smoking behavior in the backdrop of marketing variables such as illegal purchases of cigarettes by adolescents.

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REQUIRED KNOWLEDGE, SKILLS AND ABILITIES FROM HEALTHCARE CLINICAL MANAGERS' PERSPECTIVES

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ABSTRACT

An essential determinant of healthcare organizational performance is managerial competence. From the research, it appears that many fulfilling those managerial roles do not appear to possess proper management qualifications or managerial experience in healthcare. This study focuses on expanding previous research to another segment of the healthcare delivery systems that of managers, supervisors and directors within a broader scope of healthcare organizations. The study asked healthcare managers, supervisors and directors to rate the importance of 50 knowledge, skills, and ability (KSA) concepts perceived as being necessary for successfully managing their current type of healthcare organization. It also examines the role of gender, age, education, years in health care and years of experience in healthcare management as factors that could influence the necessary skills needed for effective management. Of the 175 respondents, the majority were females at 78.9% while Caucasians represented 88.1% of the sample. This study further clarified and expanded the KSAs across a wider spectrum of supervisors, managers and executives. Additionally, the identification of seven interpretable factors have evolved which explained 61.5% of the variance in this study. These factors further define those KSA clusters that supervisors, managers, and executives identify as being most important for their success.

INTRODUCTION

The ever-increasing uncertainty that confronts the U.S. health services industry is placing an enormous demand on providers of care and those who lead and manage delivery systems (Hudak, Brooke, Finstuen, & Riley, 1993). Jobs in the healthcare industry are in a constant state of change, requiring a workforce that is not only prepared to adjust quickly to the changing environment but to simultaneously maintain or improve overall organizational performance.

An essential determinant of healthcare organizational performance is management competence. Studies have examined the knowledge, skills, and abilities of top-level executives, primarily in hospital settings. However, there is a need for expanding that perspective of the requisite knowledge, skills and abilities beyond the hospital setting. We seek to explore those

determinants beyond that previous studied and expand the perspective of managerial competence.

REVIEW OF THE LITERATURE

Review of the literature found that healthcare education studies focused on managerial skills related to business management. “The general human resources literature typically refers to competencies through the acronyms SKA or KSA, sometimes defined as skills, knowledge, and ability or knowledge, skills and abilities. Competencies have also been referred to as skills, knowledge, and attitudes (or aptitudes), with ability being subsumed under skill” (Shewchuk, O'Connor, & Fine, 2005, p. 33).

Many fulfilling those managerial roles do not appear to possess proper management qualifications or managerial experience in healthcare. If the healthcare industry is to effectively manage the growth of this customer base, managers need to possess the requisite skills and abilities to meet the changing business needs (Mathews, Tozer, & Walker, 2004). Although the labor shortages have been particularly problematic in the nursing fields and other allied health professions, there has also been some speculation surrounding a potential executive leadership shortage. Furthermore, there have been concerns that those in the youthful workforce cohorts will be poorly prepared for their new roles (S. Collins, Matthews, McKinnies, K. Collins, & Jensen, 2009).

The literature on the subject of managerial skills in healthcare is extensive focused on the hospital environment. There is overwhelming consensus that business-related analytical skills and functional abilities remain critically important ingredients for success in managing health care organizations. However, there is strong evidence of concern among practitioners that an exclusive focus on quantitative analysis, functional specialization, and the calculative rationality of the "bottom line" may not adequately prepare new managers to be adaptive, collaborative and team-builders. These managers will be needed to lead health care organizations of the future.

The hospital industry will have to seek, hire, and retain highly qualified individuals that have a breadth of knowledge of both business and healthcare in order to remain competitive. Organizations must recruit, hire, and train individuals that possess a multitude of managerial skills (Hurley & Brewer, 1991). “In the last 100 years, technology has blossomed, healthcare has spread to near universality, and delivery organizations have exploded in size, complexity and sophistication” (Griffith, 2007, p. 11). However, novice managers often find their new roles frustrating, and consistently encounter situations that stress and strain their managerial abilities. Their inexperience and lack of knowledge contribute to a resounding lack of leadership among health care professionals. Lack of managerial development and skills often leads to employee frustration, disenfranchisement from the health care organization, and, in some cases, resignation from the health care system (Weston et al., 2008). Without formal preparation for management roles and responsibilities, novice managers learn by trial and error and thus frequently mishandle

employee issues, which cause both the manager and the employee to become discouraged in the workplace. This has severely affected the management of relationships, the clarity of communication, the ability to create effective working environments, and excellence in practice.

CURRENT STUDY: RESEARCH OBJECTIVES

This study focuses on expanding previous research to another segment of the healthcare delivery systems that of managers, supervisors and directors within a broader scope of healthcare organizations. The study asked healthcare managers, supervisors and directors to rate the importance of 50 knowledge, skills, and ability (KSA) concepts perceived as being necessary for successfully managing their current type of healthcare organization. The significant changes in healthcare delivery and financing have placed tremendous stress on the system and the workers and executives in it. It is now an opportune time for further research on executive management in the healthcare industry, especially organizations that focus on a variety of organizational types. Regardless of delivery setting, in order to remain competitive and profitable, organizations must have executive managers prepared with the right knowledge, skills, and abilities and that correlate for success in their position (Hurley & Brewer, 1991).

This study addresses the gap in research by identifying the necessary knowledge, skills, and abilities for executives in a broader segment of the healthcare delivery system. Additionally, we examined the KSAs of healthcare management groups to more clearly define the domains of their positions that contribute to their success. It also examines the role of gender, age, education, years in health care and years of experience in healthcare management as factors that could influence the necessary skills needed for effective management. Since researchers have conducted many studies examining the knowledge, skills, and abilities of top-level executives, primarily in hospital settings, however, the research on executives is lacking in its focus on the knowledge, skills, and abilities of managers, supervisors and directors in a broader range of healthcare settings. This study filled that gap in research by identifying the necessary knowledge, skills, and abilities for managers, supervisors and directors in broader segments of the healthcare delivery system. We examined the knowledge, skills, and abilities of healthcare management group not extensively studied thus providing a baseline of data to examine and understand how these skills and abilities prepare these executives to be successful in their roles.

METHODOLOGY

The targeted population for this study was current managers, supervisors, and executives in a healthcare setting. The participants were selected from current and former students and faculty within a graduate program in health administration. In addition to these participants, this study utilized a snowball technique and requested that the primary participants forward the email to at least three colleagues that meet the criteria for the study.

Table 1: **Knowledge, Skills, and Ability Items**	
Effective leadership	Effective implementation of clinical programs
Creating a positive work environment	Risk management
Effective managing conflict	Quality assessment of patient outcomes
Multi-tasking	Prepares budgets for department/organization
Motivating others	Communication organizational vision to stakeholders
Empathy for patient/client concerns	Public speaking
Ability to be decisive	Health information management
Sensitivity to staff problems	Knowledge of healthcare issues
Work is consistent with personal ethics	External networking
Creative problem solving	Contracts/agreements
Run effective meetings	Economic analysis and application to decision making
Ethical business practices	Ability to develop a mission statement
Measuring performance of department/organization employees	Utilization of research skills
Use of computer technology	Ability to conduct healthcare risk assessment
Delegate work	Conduct organizational assessments
Lead organizational change	Financial statements and critical ratios
Consider ethical implication in clinical decisions	Audits for clinical compliance with Medicare/Medicaid regulations
Accreditation standards	Utilization of a global business perspective
Strategic planning techniques	Audits for financial compliance with Medicare/Medicaid regulations
Visibility to the patient/clients of your organization	Components of marketing techniques
Knowledge of integrated healthcare delivery systems	Facility/plant management
Manage diversity in the marketplace	Managing media relations
State and Federal health care regulations	Management of account receivables
Work with organizational governing body	Conduct market research
Project management techniques	Bond covenants

In addition, this study utilized a panel of experts to review the instrument for comprehensiveness and completeness. The expert panel included, healthcare executive directors and others currently involved in a managerial function within a in a variety of sizes of healthcare organizations. Twenty-five healthcare experts reviewed the survey for completeness, readability, and verbiage. Additionally, the expert panel provided feedback on the data elements to determine

both applicability and relevance to the healthcare necessary skills and knowledge set. The final set of KSAs is presented in Table 1.

RESULTS

Table 2 describes the demographics of the sample. The majority were females at 78.9.2% while Caucasians represented 88.1% of the sample. The majority was 41 years or older (77.1%) while 90.8% had a bachelor's degree or better. The average experience in health care was 24.7 years and average years in their current position was 8.5. Almost 70% of the sample was classified as middle management based on respondent position titles.

Table 2: Sample Demographics

Characteristic	Frequency	Percentage	Mean
Gender:			
Male	37	21.1	-------
Female	138	78.9	
Ethnicity:			
African-American	6	3.4	
Asian	5	2.8	
Caucasian	155	88.1	-------
Latino/Latina	9	5.1	
Other	1	.6	
Age:			
25-40 years	39	22.9	
41-52 years	71	41.8	44.0
Over 52 years	60	35.3	
Education:			
High School or Associates Degree	16	9.2	
Bachelors	87	50.3	-------
Masters or Doctorate	70	40.5	
Years of Experience in Health Care:			
3-20 years	51	34.0	
21-30 years	55	36.7	24.7
31-45 years	44	29.3	
Years Experience in Current Position:			
1-4 years	45	30.0	
5-10 years	68	45.3	8.5
Over 10 years	37	24.7	
Job Title:			
Executive	15	9.2	
Middle Management	114	69.9	
First Line Supervisor	21	12.8	
Staff	13	7.9	

Note. Percentages may not add to 100% due to rounding errors.

Table 3 shows the means for the 50 KSAs. Effective leadership (6.81), creating a positive work environment (6.74), effective management of conflict (6.71) and multi-tasking (6.71) had the highest importance ratings. Following closely behind was motivating others (6.63), empathy for patient/client concerns (6.56), sensitivity to staff problems (6.56), and work is consistent with personal ethics (6.51). The lowest rated items were: bond covenants (2.32), managing media relations (3.93), facility/plant management (4.14), components of marketing techniques (4.49), and utilization of a global business perspective (4.56).

When considering the statistical error of .54, the first 14 KSAs are statistically equivalent, effective leadership through use of computer technology. Bond covenants were the lowest rated item. Conduct market research, management of account receivables, managing media relations, and facility/plant management were the next lowest cluster of items.

Table 3: Knowledge, Skills, and Ability Means

Knowledge, Skills, and Ability Items	Mean
Effective leadership	6.81
Creating a positive work environment	6.74
Effective managing conflict	6.71
Multi-tasking	6.71
Motivating others	6.63
Empathy for patient/client concerns	6.56
Sensitivity to staff problems	6.56
Work is consistent with personal ethics	6.51
Ability to be decisive	6.49
Creative problem solving	6.47
Ethical business practices	6.37
Run effective meetings	6.36
Measuring performance of department/organization employees	6.31
Use of computer technology	6.26
Delegate work	6.24
Lead organizational change	6.17
Consider ethical implication in clinical decisions	6.06
Accreditation standards	5.99
Manage diversity in the marketplace	5.97
Visibility to the patient/clients of your organization	5.96
Knowledge of integrated healthcare delivery systems	5.96
Strategic planning techniques	5.93
State and Federal health care regulations	5.92
Work with organizational governing body	5.81
Quality assessment of patient outcomes	5.80

Table 3: Knowledge, Skills, and Ability Means	
Knowledge, Skills, and Ability Items	Mean
Effective implementation of clinical programs	5.79
Project management techniques	5.76
Risk management	5.72
Prepares budgets for department/organization	5.70
Communication organizational vision to stakeholders	5.61
Public speaking	5.57
Health information management	5.54
Knowledge of healthcare issues	5.47
External networking	5.27
Economic analysis and application to decision making	5.21
Contracts/agreements	5.12
Financial statements and critical ratios	5.09
Audits for clinical compliance with Medicare/Medicaid regulations	5.05
Ability to conduct healthcare risk assessment	5.03
Utilization of research skills	4.96
Ability to develop a mission statement	4.93
Conduct organizational assessments	4.92
Audits for financial compliance with Medicare/Medicaid regulations	4.65
Utilization of a global business perspective	4.56
Components of marketing techniques	4.49
Facility/plant management	4.14
Managing media relations	3.93
Management of account receivables	3.88
Conduct market research	3.81
Bond covenants	2.32
Note. All KSA items were on a 7 point scale with anchors being "not at all important" and "critically important." The F value was significant at $p \leq .01$. Based on Tukey Kramer post hoc multiple comparisons, differences between means greater than .54 are significant at $p \leq .05$.	

Table 4 reviews the importance of the skills domains. Respondents rated the importance of organizations skills (6.63), business administration skills (6.36), and interpersonal skills (6.21) as the three most important domains given the statistical error of .55. The next most important was communication skills (6.08) followed by board relation skills (5.08) and fund raising skills (4.48).

Table 4: Skills Rating	
Skills	Mean
Organizational skills	6.63
Business administration skills	6.36
Interpersonal skills	6.21
Communication skills	6.08
Board relations skills	5.08
Fund raising skills	4.48
Note. Skills were rated on a 7 point scale with the anchors being "not important at all" and "critically important." The F value was significant at $p \leq .01$. Based on Tukey Kramer post hoc multiple comparisons, differences between means greater than .55 are significant at $p \leq .05$.	

A series one-way ANOVAs were run with the 50 KSAs serving as dependent variables and the demographics of years in current position, age, years of experience in healthcare, education, and gender serving as the fixed factors. Years in current position, was recoded into three categories: 1-4 years, 5-10 years, and over 10 years. Age was recoded into three categories: 25-40 years, 41-52 years, and over 52 years. Years of experience in healthcare was recoded into three groups: 3-20 years, 21-30 years, and 31-45 years. Finally, education was grouped as follows: high school/associates degree, bachelor's degree, and masters/doctorate. Tables 5 – 9 report these results.

Table 5 indicates that those who were in their position 1-4 years rated healthcare regulations, audits for clinical compliance with Medicaid/Medicare regulations, visibility to patients/clients of your organization, and diversity as less important than those 5-10 years. Those in their position over 10 years rated contracts/agreement, facility/plant management, communicating organizational vision to stakeholders, project management techniques, and public speaking as less important than those who were in their current position 5-10 years.

Table 6 shows that those 25-40 years old rated financial statements and critical ratios, effective implementation of clinical programs, state and federal healthcare regulations, accreditation standards, external networking, and managing media relations as less important that those 41-52 years and in some instances those over 52 years. Respondents 25-40 and 41-52 years rated bond covenants as less important than those respondents over 52 years.

Table 5: One-Way ANOVAs of 50 KSAs with Years in Current Position as the Fixed Factor	
KSA	Significant Post Hoc Tests
State and Federal healthcare regulations	Those in their position 1-4 years rated healthcare regulations as less important (5.60) than those in their position 5-10 years (6.33)
Audits for clinical compliance with Medicaid/Medicare regulations	Those in their position 1-4 years rated clinical compliance as less important (4.58) than those in their position 5-10 years (5.63)
Accreditation standards	Those in their position 1-4 years rated accreditation standard as less important (5.44) than those in their position 5-10 (6.76) and over ten years (6.46)
Contracts/agreements	Those in their current position over 10 years rated contracts as less important (4.64) than those in their position 5-10 years (5.59)
Facility/plant management	Those in their current position over 10 years rated plant/facility as less important (3.57) than those in their position 5-10 years (4.59)
Visibility to the patients/clients of your organization	Those in their current positions 1-4 years rated visibility as less important (5.49) than those in their position 5-10 years (6.32) and those in their position over 10 years (6.19)
Communicating organizational vision to stakeholders	Those in their position over 10 years rated communicating organizational vision as less important (4.95) than those in their position 1-4 years (5.84) and those in their position 5-10 years (6.04)
Project management techniques	Those in their current position for over 10 years rated project management as less important 5.22) than those in their position 5-10 years (6.06)
Public speaking	Those in their position over 10 years rated public speaking as less important (5.08) than those in their position 5-10 years (5.94)
Diversity	Those in their position1-4 years rated diversity as less important (5.53) than those in their position 5-10 years (6.21) and those in their position over 10 years (6.38)
Note. All KSA items were on a 7 point scale with anchors being "not at all important" and "critically important." The F value was significant at $p \leq .05$. Based on Tukey's-b post hoc multiple comparisons, differences between means were significant at $p \leq .05$.	

Table 7 indicates that those with 3-20 years of experience in healthcare rated facility/plant management, risk management, project management techniques, ethical business practice, and ability to conduct healthcare risk assessments as less important than those with 31-45 years experience and in some instances those with 21-30 years experience. For bond covenants, those respondents with 21-30 years of experience in healthcare rated them as less important than those 31-45 years of experience.

Table 6: One-Way ANOVAs of 50 KSAs with Age as the Fixed Factor	
Financial statements and critical ratios	Those 25-40 years rated financials as less important (4.49) than those 41-52 years (5.38) and those over 52 years (5.37)
Bond covenants	Those 41-52 years 2.06) and those 25-40 years (2.10) rated bond covenants as less important than those over 52 years (2.83)
Effective implementation of clinical programs	Those 25-40 years rated clinical programs as less important (5.10) than those 41-52 years (5.89) and those over 52 years (6.08)
State and federal health care regulations	Those 25-40 years (5.38) and those 41-52 years (5.74) rated health care regulations as less important than those over 52 years (6.47)
Accreditation standards	Those 25-40 years rated accreditation as less important (5.08) than those 41-52 years (6.15) and those over 52 years (6.36)
External networking	Those 25-40 years rated networking as less important (4.87) than those over 52 years (5.54)
Lead organizational change	Those 25-40 years rated leading change as less important (5.64) than those 41-52 years (6.27) and those over 52 years (6.32)
Managing media relations	Those 25-40 rated media relations as less important (3.28) than those over 52 years (4.03) and those 41-52 years (4.1)
Note. All KSA items were on a 7 point scale with anchors being "not at all important" and "critically important." The F value was significant at $p \leq .05$. Based on Tukey's-b post hoc multiple comparisons, differences between means were significant at $p \leq .05$.	

Table 7: One-Way ANOVAs of 50 KSAs with Years of Experience in Healthcare as the Fixed Factor	
Bond covenants	Those with 21-30 years experience rated bond covenants (2.13) as less important than those with 31-45 years experience (2.88)
Facility/plant management	Those with 3-20 years experience (3.84) and those with 21-30 years experience (3.89) rated facility/plant management as less important that those with 31-45 years experience (4.73)
Risk management	Those with 3-20 years experience rated risk management (5.31) as less important than those with 31-45 years experience (6.09)
Project management techniques	Those with 3-20 years experience rated project management as less important (5.35) than those with 31-45 years experience (6.05)
Ethical business practice	Those with 3-20 years experience rated ethical business practices as less important (6.16) than those with 31-45 years experience (6.64)
Ability to conduct healthcare risk assessments	Those with 3-20 years experience rate health risk assessment as less important (4.45) than those with 21-30 years experience (5.17) and those with 31-45 years experience (5.37)
Note. All KSA items were on a 7 point scale with anchors being "not at all important" and "critically important." The F value was significant at $p \leq .05$. Based on Tukey's-b post hoc multiple comparisons, differences between means were significant at $p \leq .05$.	

Table 8 shows that those respondents with a high school or associates degree rated audits for financial compliance with Medicaid/Medicare regulations, components of marketing techniques, and public speaking as less important than with a bachelor's or masters/doctorate.

Table 8: One-Way ANOVAs of 50 KSAs with Education as the Fixed Factor	
Audits for financial compliance with Medicaid/Medicare regulations	Those with a high school/associate degree rated financial compliance as less important (3.56) that those with a bachelors' degree (4.74) or those with a masters/doctorate (4.81)
Components of marketing techniques	Those with a high school/associate degree rated marketing techniques as less important (3.38) than those with a bachelors' degree (4.53) or those with a masters/doctorate (4.69)
Public speaking	Those with a high school/associate degree rated public speaking as less important (4.88) than those with a bachelors' degree (5.45) or those with a masters/doctorate (5.83)
Note. All KSA items were on a 7 point scale with anchors being "not at all important" and "critically important." The F value was significant at $p \leq .05$. Based on Tukey's-b post hoc multiple comparisons, differences between means were significant at $p \leq .05$	

Table 9 reviews the results for gender. Women rated effective implementation of clinical programs, accreditation standards, sensitivity to staff problems, creative problem solving, empathy for patient/client concerns, visibility to the patient/clients of your organizations, effectively managing conflict, risk management, project management techniques, work is consistent with personal ethics, motivating others, leading organizational change, delegate work, run effective meetings, consider ethical implications in clinical decisions, ability to be decisive, management diversity in the workplace, and utilization of research skills as more important than men.

Nine of the items that women rated as more important than men involved management/leadership skills: effective implementation of clinical programs, accreditations standards, creative problem solving, risk management, project management techniques, leading organizational change, ability to be decisive, managing diversity in the workplace, and utilization of research skills. Seven of the items that women rated as more important were interpersonal in nature: sensitivity to staff problems, empathy for patient/client concerns, visibility to the patients/clients of your organization, effectively managing conflict, motivating others, delegate work, and run effective meetings. Two were concerned with ethics: work is consistent with personal ethics and consider ethical implications in clinical decisions.

Table 9: One-Way ANOVAs of 50 KSAs with Gender as Fixed Factor	
Effective implementation of clinical programs	Men rated effective implementation of clinical programs as less important (5.27) than women (5.93)
Accreditation standards	Men rated accreditation standards as less important (5.41) than women (6.13)
Sensitivity to staff problems	Men rated sensitivity as less important (6.16) than women (6.69)
Creative problem solving	Men rated creative problem solving as less important (6.16) than women (6.55)
Empathy for patient/client concerns	Men rated empathy as less important (6.22) than women (6.64)
Visibility to the patients/clients of your organization	Men rated visibility as less important (5.41) than women (6.07)
Effectively managing conflict	Men rated conflict management as less important (6.43) than women (6.78)
Risk management	Men rated risk management as less important (5.27) than women (5.82)
Project management techniques	Men rated project management as less important (5.30) than women (5.86)
Work is consistent with personal ethics	Men rated personal ethics as less important (6.22) than women (6.58)
Motivating others	Men rated motivating others as less important (6.38) than women (6.70)
Leading organizational change	Men rated leading change as less important (5.76) than women (6.25)
Delegate work	Men rated delegating work as less important (5.78) than women (6.34)
Run effective meetings	Men rated effective meetings as less important (5.81) than women (6.49)
Consider ethical implications in clinical decisions	Men rated ethical clinical decisions as less important (5.46) than women (6.19)
Ability to be decisive	Men rated decisiveness as less important (6.14) than women (6.57)
Manage diversity in the workplace	Men rated diversity as less important (5.38) than women (6.10)
Utilization of research skills	Men rated research skills as less important (4.44) than women (5.04)
Note. All KSA items were on a 7 point scale with anchors being “not at all important” and “critically important.” The F value was significant at $p \leq .05$. Based on Tukey’s-b post hoc multiple comparisons, differences between means were significant at $p \leq .05$.	

Table 10 shows that there were some demographic differences based on a series of one-way ANOVAs conducted on the 6 domains. For the business administration domain, those 25-40 years rated business administration skills as less important than those 41-52 and over 52 years old. Those who had between 3-20 years experience in healthcare rated business administration skills as less important than those in the business for 21-30 and 31-45 years. For gender, men rated organizational, communication, and interpersonal skills as less important for women.

Table 10 :One-Way ANOVAs of Skill Domains with Demographic Items as Fixed Factors Domain		
Domain	Factor	Result
Business administration	Age	Those 25-40 years old rated business administration skills as less important (5.95) than those 41-52 years old (6.44) and those over 52 years old (6.57)
Business administration	Years of experience in healthcare	Those with 3-20 years of experience rated business administration skills as less important (6.04) than those with 21-30 (6.53) and those with 31-45 years of experience (6.61)
Organizational skills	Gender	Men rated organizational skills as less important (6.35) than women (6.70)
Communication skills	Gender	Men rated communication skills as less important (5.57) then women (6.23)
Interpersonal skills	Gender	Men rated interpersonal skills as less important 5.51) than women (6.41)
Note. All skills categories were on a 7 point scale with anchors being "not at all important" and "critically important." The F value was significant at $p \leq .05$.		

An initial Principle Component factor analysis with a Varimax rotation was run on the 50 KSA variables. It was found that 7 items did not load on any factor. They were work with governing body, strategic planning techniques, facility/plant management, multi-tasking, ethical business practices, use of computer technology, and ability to be decisive. These items were removed for the second factor analysis. Seven interpretable factors evolved which explained 61.5% of the variance. Only factor loadings of .40 or better are reported in Table 11.

The first factor labeled External Stakeholder Domain explained the most variance at 28.0%. The second factor called Personal Ethos Domain accounted for 9.8% of the variance while the third factor, Communicating Change Domain, accounted for 6.4% of the variance. Factor 4, Clinical Compliance Domain accounted for 5.9% of the variance while factor 5, Managerial Tasks Domain, accounted for 4.6% of the variance. The last two factors, Dollars and Cents Domain and Ethics and Quality Domain each accounted for roughly 3% of the variance.

The rationale for choosing the above mentioned factor names were:

External Stakeholder Domain: These factors focus on areas related to how the organization is viewed by outside entities. These skills not only help establish the organization's image within the community but also establish necessary relationships that allow the organization to exist or continue to operate within external guidelines/requirements.

Personal Ethos Domain: These factors demonstrate the personal internal skills necessary to help manage from within the organization. These skills help develop internal relationships to help the organization focus on organization efficiencies.

Communicating Change Domain: These focus on how communication is shared both within and external to the organization. With a myriad of external stakeholder requirements, there is a need to not only effectively plan and implement these requirements but manage and communicate so that the organization can be as effective as possible.

Clinical Compliance Domain: Internal processes to maintain practices that meet external stakeholder requirements, like documentation, clinical and financial standards. Additionally there can be opportunities to develop and implement new programs that increase the efficiencies/revenue to meet internal customer needs.

Managerial Tasks Domain: These are primary managerial tasks to organize and manage personnel that create a positive environment within the organization.

Dollars and Cents Domain: The domain demonstrates the requisite knowledge of finance and how to interpret and manage the cash necessary to meet financial obligations but also make a profit.

Ethics and Quality Domain: These factors focus on creating an environment where the actions of the employees are conducted in an ethical manner. Additionally focused on tasks that are not only completed within requirements but also strive to meet a quality measure in the delivery of care and program outcomes within the organization.

Table 11: Rotated Component Matrix, Highest Loadings

KSA	*Component*						
	External Stakeholder Domain	*Personal Ethos Domain*	*Communicating Change*	*Clinical Compliance Domain*	*Managerial Tasks Domain*	*Dollars and Cents Domain*	*Ethics and Quality Domain*
Conduct Marketing Research	.752						
Ability to Develop Mission Statement	.746						
Managing Media Relations	.728						
External Networking	.601						
Knowledge of Healthcare Legal Issues	.593						
Utilization of Research Skills	.591						
Conduct Organizational Assessments	.586						
Components of marketing Techniques	.537						
Economic Analysis and Application to Decision Making	.537						
Contracts/Agreements	.497						
Ability to Conduct Healthcare Risk Assessments	.471						

Table 11: Rotated Component Matrix, Highest Loadings							
	Component						
KSA	*External Stakeholder Domain*	*Personal Ethos Domain*	*Communicating Change*	*Clinical Compliance Domain*	*Managerial Tasks Domain*	*Dollars and Cents Domain*	*Ethics and Quality Domain*
Utilization of Global Business Perspective	.433						
Knowledge of Integrated Healthcare delivery systems	.407						
Effective Leadership		.742					
Motivating Others		.752					
Empathy for Patient/Client Concerns		.727					
Work is Consistent with Personal Ethics		.598					
Creative Problem Solving		.754					
Visibility to the Patients/Clients of Organization		.505					
Effectively Managing Conflict		.455					
Communicating organizational vision to stakeholders			.759				
Project management techniques			.755				
Public speaking			.709				
Lead organizational change			.618				
Risk management			.434				
Audits for clinical compliance with Medicaid/Medicare				.738			
Accreditation standards				.736			
State and federal health care regulations				.713			
Effective implementation of clinical programs				.587			
Audits for financial compliance with Medicare/Medicaid Regulations				.585			
Measuring performance of department/organization employees					.800		
Delegate work					.658		
Run effective meetings					.621		
Creating a positive work environment					.408		

Table 11: Rotated Component Matrix, Highest Loadings

KSA	Component						
	External Stakeholder Domain	*Personal Ethos Domain*	*Communicating Change*	*Clinical Compliance Domain*	*Managerial Tasks Domain*	*Dollars and Cents Domain*	*Ethics and Quality Domain*
Financial Statements and Critical Ratios						.803	
Management of Accounts Receivables						.789	
Prepare Budgets for Department/Organization						.755	
Bond Covenants						.419	
Quality assessments of patient outcomes							.741
Ability to conduct health care risk assessment							.530
Health information management							.524
Risk management							.511

CONCLUSIONS AND RECOMMENDATIONS

Even though there have been a substantial amount of studies conducted on the knowledge, skills and abilities of hospital managers, this study further clarified and expanded the KSAs across a wider spectrum of supervisors, managers and executives. Additionally, the identification of seven interpretable factors has evolved which explained 61.5% of the variance in this study. These factors further define those KSA clusters that supervisors, managers, and executives identify as being most important for their success.

Those respondents that were employed earlier in their career focused on regulatory compliance and patient interaction than those later in their career. Those later in their career focused more on those factors that continued to contribute the organizational continuation. This could demonstrate the increased commitment to the organization and its continued success but further research would be required to confirm this perspective.

The gender findings are perplexing. Women rated organizational KSAs more important than men and the skills were focused on traditional managerial tasks. Women could possible no longer shy away from tasks/behaviors that have traditionally have been associated with male dominate virtues of strength and power in executive roles within healthcare organizations.

Therefore, a key factor to success with these respondents was longevity in the business and age of the respondents. The more successful hospital managers, not surprisingly are the

seasoned veterans. This conclusion indicates that education may well be a key variable that can help lead younger managers to success more quickly. An appreciation of the fundamentals of basic strategic thinking and leadership development is crucial. This industry cannot wait for the years to pass for a manager to accrue the necessary skills to become successful given the pressures of the healthcare delivery for the U.S. population.

Healthcare education programs can use these results of this study to evaluate curriculum and address the key KSAs to prepare future executives to be effective and successful in managing in a healthcare environment. In addition, current board of directors of the healthcare organizations should use the results of this study in two ways. First, the KSAs identified as contributing to the success of the supervisors, managers, and executives should be used to evaluate potential candidates moving into this management role within the healthcare organization. Second, the board of directors should use these results to evaluate the level of competence of the current supervisors, managers, and executives to identify potential areas of strengths or gaps in the KSAs identified in this study.

Further opportunities for research, based on the results of this study, include the changes in healthcare delivery as a resulted of current changes in the laws from the federal government. There should be a focus to solicit perspectives from supervisors, managers, and executives under-represented by this study, to increase minority and multi-cultural representation. Additional study on the changes in the knowledge, skills, and abilities of future supervisors, managers, and executives appears to be warranted to address the needs of these changing healthcare demographics. In this current study, nearly 98% of the respondents were Caucasian, which suggests further research should evaluate any changes in the responses to the identified KSAs as the ethnic representation shifts over the next 5 to 20 years.

Validation of the newly identified domains, External Stakeholder Domain, Personal Ethos Domain, Communicating Change Domain, Clinical Compliance Domain, Managerial Tasks Domain, Dollars and Cents Domain and Ethics and Quality Domain should be conducted especially as it applies to other types of organizations. These domains may vary in importance based on the levels within the organizations or the types of organizations being studied.

Further expansion of the list of the key knowledge, skills, and abilities for supervisors, managers, and executives needs to be explored. One of the limitations identified was the finite list of KSAs and the potential for KSAs that are required to be successful yet not addressed in the current survey instrument. The survey instrument used in this study provided a comprehensive list of KSAs but the list was not exhaustive and further research to add to those already identified appears warranted.

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ENHANCING DRUGS ACCESS IN NORMAL AND CRITICAL CIRCUMSTANCES

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ABSTRACT

The drug supply and delivery play a very important role in developing a quality health care system. In spite of recent improvement in supply process, drug stores still face a difficulty in providing effective drug delivery and flexible access methods to patients during critical times. Access to drugs during such periods is usually plagued by several constraints which demand more preventive and real-time delivery systems. This research project investigates methods and constraints of drug supply and delivery in the greater New Orleans area. The analysis of collected data collected from sixty-seven drug stores provide significant information on how these drug stores operate and respond to disaster and critical times. The result used to design a demand driven enhanced and adaptive drug supply and delivery system operating on a real-time basis.

INTRODUCTION

Health care management has always been and still remains one of today's top issues of concern worldwide. Researchers and scholars have studied different aspects of this issue including drug distribution management (Nilay, 2004), critical care (Hick, 2007; Lewis, 2005), and strategies (Tokman, 2007; NACDS, 2007). In 2005, national health care expenditures in the United States totaled $2 trillion, a 7% increase from 2004. With an ever increasing upward surge in technology, there has also been the evolution of medical equipment and resources from remote to more sophisticated and more efficient resources (U.S. Department of Health and Human Services, 2007). The experts in the World Health Organization (WHO) at the United Nations had developed health guidelines and standards to help countries to address public health issues. WHO also supports and promotes health research and through this organization, governments can jointly take on global health problems and improve people's well-being (Thomson, 2007).

The world pharmaceutical industry grew by 8% annually to $541.0 billion in 2002 driven primarily by the demographic shifts (i.e. increasing elderly population), changing epidemiological patterns, increase in healthcare awareness and the ability of the industry to

provide innovative cures for various ailments. The world's per-capita spending on pharmaceuticals has increased steadily from $72 in 2000 to $87.1 in 2002 (Mark, 2004).

There have been several efforts in managing the supply chain of drug stores. In this light, Associations in the U.S.A. such as NACDS (National Association of Chain Drug Stores) have developed an emergency preparedness checklist for community pharmacy operators in order to assist them plan for business continuity during and after emergency. Also, the Rx response program is an information-sharing forum of Pharmaceutical manufacturers, distributors, pharmacies, hospitals, Federal Government agencies that engage during pandemics and other disasters that disrupt the normal supply of medicines (Rx Response; Medicines to patients in times of emergency, 2007).

Statement of the Problem

Emergency preparedness is critical for all businesses especially to drugstores that deal with the dispensation of drugs, an important aspect of healthcare. Most businesses do fairly well in the management of their supply chains during normal seasons, but it becomes difficult to handle during peak seasons or critical periods such as disasters, seasonal illness, and other emergency situations(Cecil C& Robert B, 2006).

Also, the shortage of manufacturers of certain drugs poses a problem of insufficiency of such medications during seasonal ailments. An example was the shortage of Flu vaccines experienced in USA in October 2004 as the supply of this vaccine was cut nearly to half as Britain shut down the world's second-leading supplier, the Chiron Corp (Gathany, 2004). Furthermore, periodical changes in the strains of some seasonal ailments like the influenza and the Flu viruses are a critical issue that usually leads to emergencies. The result of a shift leads to a new strains to which there is little or no prior immunity. The yearly wave of seasonal influenza is responsible for approximately 36,000 deaths and 200,000 hospitals a year in the United States (NACDs, 2007).

Drug distribution chains are vulnerable to disruption during disasters, so additional supplies and equipment may not be readily obtainable as such, effectively managing the drug supply chain has always been a problem during peak and critical periods (Critical Care: Disaster Management, June 2007). Charlie Kantz, Vice president of logistics and warehousing for specialty retailer bakers Foot ware Group remarked that, a delay in supplies of goods will mean the absence of the goods at that point in time which plays negatively on its timely delivery (Logistics Magazine, Nov 2007).

Research Objective

The objective of this research was to investigate drug supply, delivery, and access in greater New Orleans area during normal and critical periods. The objective was formulated in

terms of eight questions concerning the pharmaceutical supply chain. The questions are divided into two categories; quantitatively and qualitatively as listed below.

Major Quantitative Research Questions

RQ1: Does the Population to Drug Store ratio affect the supply process of drugs?

RQ2: How many Drug Stores offer drug delivery services?

RQ3: What is the percentage of Drug Stores that have a laid down emergency plan for disaster periods?

RQ4: How many drug stores use wireless communications to enhance the drug delivery process?

Major Qualitative Research Questions

RQ1: Do drug stores prepare well ahead of time for seasonal ailments?

RQ2: Are there enough Manufacturers and Vaccine Certified Pharmacists to handle periods of seasonal ailments?

RQ3: Is the drive thru facility necessary in drug delivery in pharmacies?

RQ4: Do Drug Stores Use Modern Technology to ensure quality services?

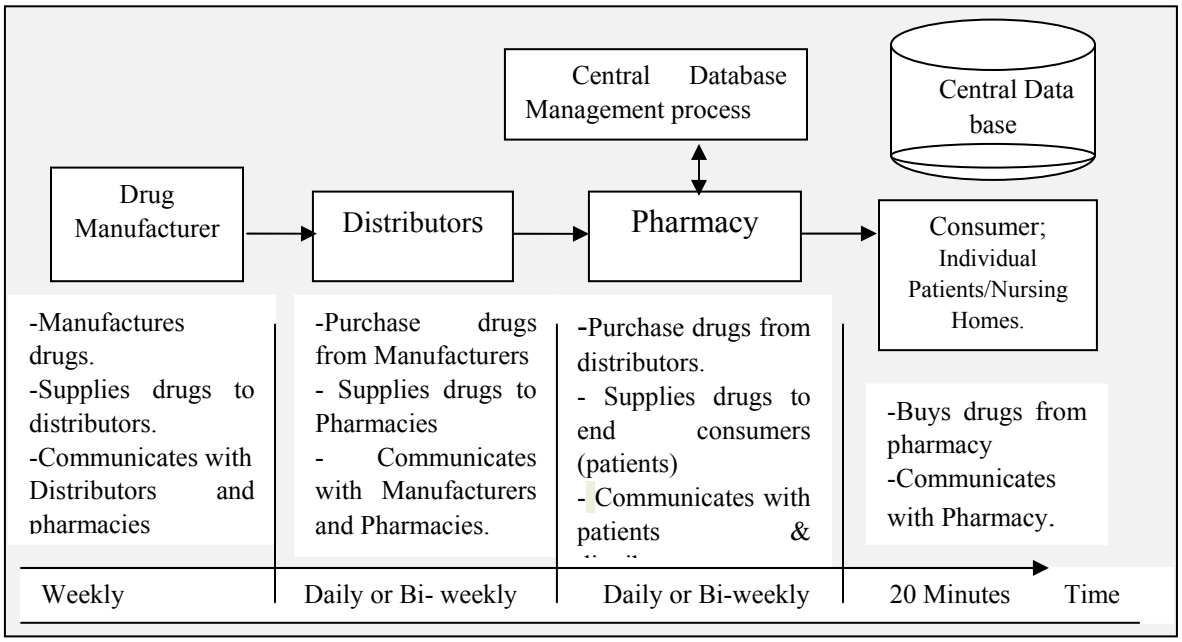
METHODOLOGY

The focus of this research is based on designing a Supply Chain Model that can serve as a framework for ensuring a continuous flow of drugs during critical and emergency periods. This requires great collaboration between pharmacists, patients, suppliers, manufacturers and the Government and the society at large. To capture the essence of operations under different circumstances, three different models have been developed that representing the following situations:

Normal business operations (daily basis)
Disaster and emergency operations (Natural and men made events)
Critical operations (Flu seasons)

Figure-1 shows a typical drug supply chain in a normal condition.

Figure 1: Drug Supply Model in a Normal Condition



Data Collection Procedure

Before the process of data collection, a sample questionnaire was designed, evaluated and modified so as to obtain valid data for analysis. Both quantitative and qualitative data were collected. This was done by the use of structured questionnaires and face-to-face interviews with sixty seven drug stores in four areas of New Orleans and its environs.

Analysis of Quantitative Data

The primary form of data collection used during this research was a questionnaire. The questions were answered by pharmacists and pharmacy managers, for they are more knowledgeable on the day to day operations of the pharmacy. The questionnaires were distributed to sixty seven community pharmacies in New Orleans central, Metairie/Kenner and West bank regions. The data collection process took between 15 and 20 minutes for each pharmacist interviewed. Time constraints were evident as pharmacists hardly have time to themselves while on duty.

Focus Areas: The area of focus in this research is the greater New Orleans, segmented into New Orleans East, New Orleans Uptown, Veterans Memorial Boulevard and West Esplanade of Metairie, Kenner, Terrytown, and Harahan in Jefferson.

Sample Size: Data was collected from 67 Drug Stores located in the areas named above.

Period of Study: The study was conducted from October 2008 to January 2009.

A questionnaire was used and distributed to pharmacists while, in the qualitative, we carried out brief interviews with pharmacists. Table-I presents data obtained from the questionnaires answered by the pharmacists in five different regions of the greater New Orleans.

Table 1: Quantitative Data Summary (Survey Questions)

Q's	Description	New Orleans East	New Orleans Uptown	Metairie	Kenner	West Bank: Terrytown, Harvey, Harahan	Total
1	Population	114,568	214,104	146,136	75,516	57,372	
2	Number of drugstores	12	24	52	12	14	114
3	Number of drug stores surveyed	10	14	28	7	8	67
4	Drugstores with database for client records	10	14	28	7	8	67
5	Drugs stores with delivery services	1	2	4	1	1	9
6	Drug stores with 2 or more suppliers	10	14	28	7	8	67
7	Drug stores with daily and weekly restock	10	13	28	7	8	67
8	# with wireless communication with insurance	10	13	28	7	8	67
9	# With wireless communication With doctors	5	7	12	3	5	37
10	# with wireless communication With Suppliers	10	12	22	5	6	55
11	Do operations increase during seasonal ailments?	8	12	22	4	5	51
12	# of Drug Stores with an Emergency plan	2	4	8	3	3	20

The following is the analysis of Quantitative questions:

Drug Store to Population Ratio (RQ1)

Analyzing table I above, we can obtain several useful information about drugstores operations, regional distribution and emergency preparedness. This analysis gives us an answer to the first research question. The following table shows drug store to population ratio.

Table 2: Pharmacy and Population Rations

Region	Ratio
New Orleans East	1:9547
New Orleans Up Town	1:8921
Kenner	1:6293
West Bank	1:4098
Metairie	1:3558

This is a clear indication that, Metairie has more pharmacies followed by the west bank region, then Kenner, New Orleans Uptown and New Orleans East. This also reduces the cycle time for customer service in this region. The larger the ratio, the more pharmacies there are and the faster the access to drugs. The figure below presents this data diagrammatically.

Delivery Services (RQ2)

An analyses of Delivery Services will give an answer to our second research question of the number of drug stores offering delivery services, an analysis from Table I shows that, most of the drugstores that serve the population are chain drugstores. However, it is worth noting that, chain drug stores are not involved in drug delivery services to Nursing homes, individuals and organizations. Private drugstores are those that carry out such services. From the table we can see that out of the 67 pharmacies surveyed, in this research, only 9 indicated that they carry out delivery services. This gives a 13.4% of the pharmacies surveyed. This percentage is still very low with respect to the growing aged population, the Handicapped and other patients all over the USA that need drug delivery services to their homes.

Emergency Preparedness (RQ3)

Twenty of the drugstores we visited responded with confidence to having an emergency plan to ensure continuous drug supply for periods like hurricanes or fire, making a total of 30%. Many pharmacists of chain drug stores do not know of an emergency plan because all directions

come from the head office. Also, special communications like emails or phone calls and posters are not done during such periods.

Wireless communication to Enhance Drug Delivery (RQ4)

This question concerns with wireless communications between pharmacy and insurance companies, with suppliers, and with doctors as described below.

Insurance Companies

Furthermore, all drug stores (100%) have wireless connections with insurance companies that cover the cost of client medication. This Wireless connection ensures quick communication between drugstores and insurance companies which ensures rapid services to clients. This also saves time in the supply chain.

Communication Method with Suppliers

Table I also tells us of how many drug stores use wireless communication systems which gives us an answer to the fourth question in this research. Almost all pharmacies are connected through an extranet with suppliers. As the Table-1indicates, 82% of drug stores use extranets in communicating with their daily suppliers. Also, most drugstores have a direct wireless communication with their head offices (main supplier) that can access their level of inventory for drug supplies that is done once or twice a week.

(c) Communication with Medical Doctors

Drug stores with wireless communication with doctors gave a 55%. Some drugstores use the E-Scribe program to communicate with Doctors for certain verifications. Many drug stores still communicate with doctors by fax or by phone. An online method of communication with Doctors authenticates the process of prescription verifications because it involves exchange of important information that needs to be written. The figure below illustrates this analysis.

ANALYSIS OF QUALITATIVE DATA

The following shows the results of interviews conducted with pharmacists. The *focus area, sample size,* and *the study period* are the same as the Quantitative method.

Figure 2: Drug Stores with Internet Connectivity

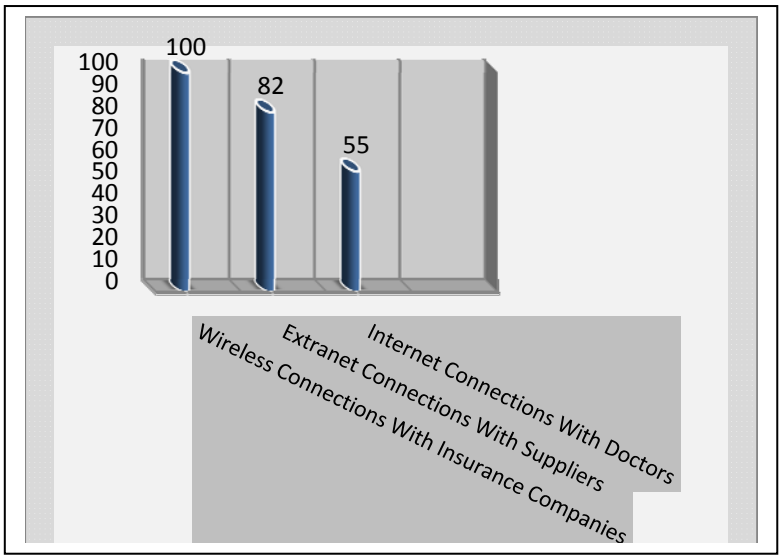


Table 3: Qualitative Data Summary

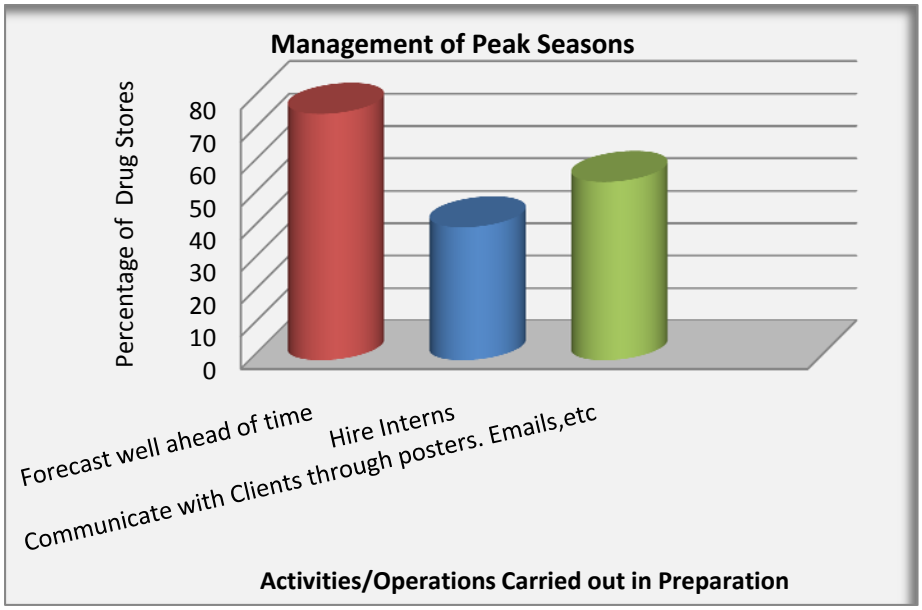
Questions	Answer (s)	New Orleans East	New Orleans Up Town	Metairie	Kenner	West Bank	Total
q1: How do you plan and manage peak seasons?	A1: Order more drugs & well ahead of time	7	9	22	5	8	51
	A2: Interns, increase hours of operation	4	4	14	2	4	28
	A3: Communicate with clients.	5	7	18	3	4	37
q2: What difficulties do you face in managing such periods?	A1: Few Manufacturers& changes in strain.	9	9	22	2	3	43
	A2: Few certified Nurses & pharmacists	8	7	14	5	4	38
q3: What suggestions can you make towards peak periods?	A1: Train more staff for flu shots	6	6	21	3	4	40
q4: Can you access client records of another branch?	A1: Yes	8	11	21	4	5	49
	A2: .No	2	3	8	3	2	18
q5: Does the drive thru facility help in quick access?	A1: Helps positively	3	4	10	3	3	23
	A2: Slows down the supply of drugs.	6	10	17	4	5	42

As the Table 3 show for a number of questions, the interviewee provided more than one answers to some of the questions. Following is the analysis of those answers for Qualitative questions.

Management of Peak Seasons (RQ1)

As Table 3 shows, 76% of the samples drug stores prepare to make orders well ahead of time towards the flu season and during other seasonal ailments. However, 41% of the drug stores admit to hire interns during such periods to assist in ensuring fast supply of drugs during such busy periods with high customer surge. Some drugstores mainly adjust to staff working smarter during such periods. However, this also indicates that there is a need for more pharmacy staff. 55% of drug stores do immediate communication with clients during critical periods of seasonal ailments, such as through the internet on their website, emails, and posters or on TV. However, intense communication are not and done well ahead of time before seasonal ailments. Also, it indicates that drugstores do not communicate with clients promptly or enough during emergency periods when an evacuation has been declared.

Figure 3: Managing Peak Seasons

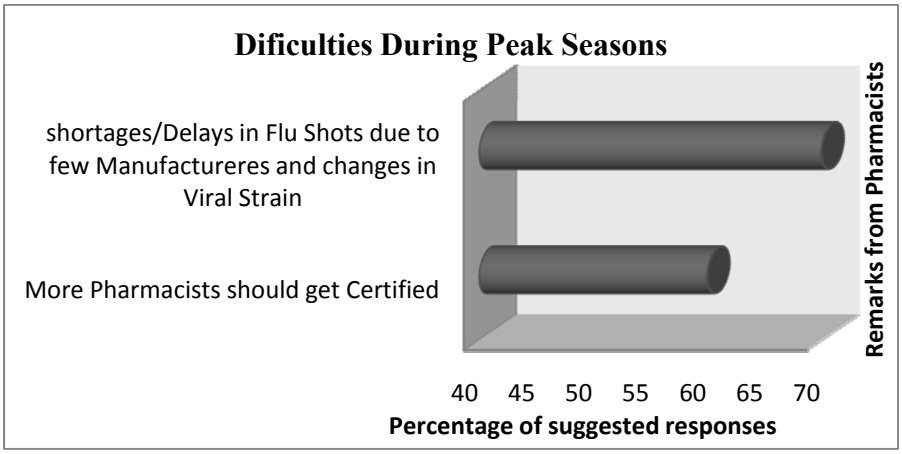


Difficulties and Suggestions during Peak Seasons (RQ2 and RQ3)

The data shows that 62% of drug stores admit that shortages or delays in flu vaccines come as a result of delays from suppliers and manufacturers which slow down the supply chain.

The numbers of Manufacturers that handle this task are few to meet up with the huge demands at a time. Also, 56% of drugstores respond that the numbers of pharmacists that are certified for administering certain vaccines like the flu shots are less. This shows that, more pharmacists need to get certified so that many pharmacists will be eligible for administering flu shots and others during such periods rather than waiting on Nurses who are not present every day, thus limiting access to such vaccines to particular days which can lead to congestion of customers.

Figure 4 : Difficulties and Suggestions



Accessing Client Records in Other Braches (RQ4)

The data collected indicates that, all pharmacies have a database for client records. This record is kept for reference purposes for a period of five years, as such clients who return after a few years can still have their information retrieved from the system.

Drive-thru Facilities

The drive-thru facility was voted out by most pharmacists. They believe that the drive thru operations could increase the customer average waiting time.

CONCLUSIONS

This research presented a framework that can be used to manage drug supply during normal and critical periods. The main focus here is during critical periods and emergencies. Analysis of the collected data indicates that:

Some regions are richer in pharmacies than others. Metairie/Kenner region comes first, followed by the West Bank region and lastly New Orleans. Patients in such regions have easy access to drug stores.

All drug stores have modern equipment and methods with which they operate, ensuring quality and quick services in the supply of drugs to customers.

Communication with suppliers and the insurance is good but that with Doctors need to be enhanced.

Most pharmacists complained of stringent laws of Louisiana State in the procedures of acquiring and administering the Flu vaccine as well as few manufacturers that slow down the supply chain during seasonal ailments.

Only private drug stores do delivery services and they make up a few percent of the entire Drug Stores.

The use of mobile pharmacies is still a growing practice which still has to be intensified by drug stores. Also, there is no central database system for patient records on drugs which can be used during emergency periods like hurricanes seasons when people get into shelters.

Recent events such as hurricanes Katrina and Gustav, Bird Flu, and Influenza demand a more flexible and comprehensive drug supply and delivery system. This system must respond to different conditions and incase on critical situation it should operate on hard real-time basis. The result of this research provides insights to some of the required conditions in design of drug supply and delivery system.

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IMPERFECTLY COMPETITIVE HEALTH CARE MARKETS—THE ISSUE IS FAIR PRICING

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ABSTRACT

This document analyzes the health care industry as it currently operates in the American economy. The introductory section explores the challenges and problems being encountered. The following sections evaluate how it measures up to models of pure competition and models of imperfect competition. Finally, the discussion will center on the issue of fair pricing and the choice of regulation by markets vs. regulation by government.

INTRODUCTION

A Competitive Market is characterized by many buyers and many sellers such that no one individual can affect prices. It is a setting where competition serves to regulate prices in a natural way leading to fairness to those who demand and those who supply in the market place. This is the ideal outcome envisioned by those advocating market direction in the vision of Adam Smith's "invisible hand" concept. If only the real world were this way in all of the different market places.

The role that government plays in the market economy will always remain one of normative value judgment about the proper balance between market direction and government direction. These judgment issues tend to emerge in those sections of the economy where there is no clear- cut division as to what should be in the private sector and what should be in the public sector.

Attempts have been made to achieve deregulation in such industries as the elective power supply situations in California a few years ago. The experience there did not seem to be such that a healthy competitive market outcome could occur. Other states such as Arkansas had already taken steps to move in the direction of deregulation but backed-off from those steps in view of the California experience. Other situations such as the market for gasoline and our recent experience with prescription drugs seem to be such that healthy competitive market outcomes do not occur. As important as competitive forces are in the American economy, there may be a case for government regulation of pricing in some sectors of the economy.

This analysis will concentrate on health care pricing but really in a broader sense makes a case for price controls in monopolized markets. Ideally the free market economy will be regulated in a natural manner by competition. To the extent that a market is characterized by competition, there is a lack of need for artificial regulation as provided by government.

Congress is continuing the process of making one of the most significant changes in the health care industry and the Medicare program since its inception. Recent change centered on prescription drugs being added as a benefit to our elderly population. More specifically the debate then and now concerns the direction the program is to go; reliance upon the private sector verses traditional government administered programs. More fundamentally the choice is between reliance upon market direction or reliance upon a government administered program. Although legislation has already been enacted to implement a prescription drug plan, there are discussions continuing with regard to the final form the plan will have in the long run and how far to go regulating the health care industry as it serves the needs of the American economy.

There seems to be a number of very significant questions to be answered. The pharmaceutical companies may not provide a classic example of competitive markets which would result in a healthy competitive market outcome. It may in fact be somewhat like the electrical power supply situation where deregulation did not work very well.

It is noteworthy that in the United States pharmaceutical research is funded more than any other country by public funds; yet, Americans pay more for prescription drugs than citizens in almost any other industrialized country. Large tax breaks are provided for research and the National Institute of Health grants considerable amounts of tax money for basic pharmaceutical research.

The purpose of this analysis was to look into details of the prescription drug and the general health care industry and objectively evaluate their meaning. As important as competitive forces are in the American economy, there may be a case to be made for government regulation in this important sector.

A very good case can be made that the health care industry has targeted profit maximization rather than patient's health in its practices. A competitive market would bring about a coincidence of these two objectives. Instead the pattern seems to be more that of a monopoly model where Adam Smith's invisible hand seems to have broken down. A recent survey by Harris found that two in three Americans believe that health care prices are "unreasonably high" and a large percent favor price controls as a solution.

A recent issue of the *AARP Bulletin* did an interesting exposé of several industry practices which paint a picture of monopolistic behavior. One concerned the industry opposition to the re-importation of drugs from Canada and other countries. This is an outgrowth of price discrimination where different prices are charged in different markets. A monopoly firm earns money from this as long as they can cover any variable cost associated with providing the product. The different prices could result from either price controls in some countries or by deliberately charging higher prices in the more inelastic market location. Another practice reported was the industry use of sales representatives who call on doctors and leave their office "awash in free drug samples" and who identify doctors to be trained and paid honorariums to talk up the products with other doctors. Vioxx was cited as a drug promoted in this manner. The third practice reported was their use of lobbyist. And, whenever a state tries to lower the cost of

prescription drugs, the industry sends in rapid response reinforcements to argue their case. These people seem to always be ready to defend the status quo for the health care industry.

A detailed front-page article in the *Wall Street Journal* recently outlined how one drug company took the once-demonized thalidomide drug to new users in treating aids and cancer but at five times its original price. The drug industry's ability to price medication ever higher has helped fund the pharmaceutical industry's research and development programs. It also contributes to their bottom line.

In 2009, the Associated Press reported that Pfizer Inc., the largest drug manufacturer, agreed to pay $2.3 billion in penalties for violation of federal drug laws. Reportedly they had been doing the following

Promotion of four prescription drugs, including the pain killer Bextra, as treatments for medical conditions different from those the drugs had been approved for by federal regulators.

Creation of phony doctor requests for medical information order to send unsolicited information to doctors about unapproved uses and dosages.

Inviting doctors to consultant meetings at resort locations, paying their expenses and providing such perks as golf; massages and other activities.

Paying kickbacks to health-care providers to encourage them to prescribe drugs for off-label uses.

Breaking the law was very expensive for the pharmaceutical firm. It is easy to understand why the pharmaceutical industry wants the government to "keep its hands off" health care.

The February, 2010 issue of *Bloomberg Business Week* reported supporting data that the health-care business is recession-proof. Healthcare companies in the Standard and Poor's 500-stock index did better than the overall market during the stock market decline. Their profit margins mostly rose, and their earnings outlook is good. Profit margins rose by 1 or 2 percentage points each year from 2006 through 2009 in the medical equipment, pharmaceuticals, and biotechnology sectors of the health care industry. On the other hand the more competitive drug retailers and health-care providers (doctors) were the exceptions holding margins steady during those same years.

One could develop these situations in greater detail and further substantiate the point about monopolistic behavior. Also, one could cite numerous other periodicals and industry studies and develop an endless list of case situations where monopoly practice is indicated.

Almost every principles of economics student learn that when regulated prices lower than the equilibrium price is imposed, a shortage of that product is the result. Beginning students also learn that whenever a price is established greater than the equilibrium level, a surplus develops in the market. The tendency is to develop generalization about the effectiveness of government

price controls on such areas as minimum wages, electricity, and prescription drug pricing. The outcome really depends upon the degree of competition prevailing in the market being evaluated.

It is not generally recognized that effective price controls necessarily cause surpluses or shortages in markets. The answer depends very much on the degree of competition prevailing in the specific market being affected. There is a significant difference in the impact of price regulation in competitive markets as contrasted with more imperfectly competitive markets. A primary purpose of this document is to bring attention to this somewhat neglected reality.

SETTING PRICES IN COMPETITIVE MARKETS

Figure 1 illustrates a standard model of pure competition. Pure competition as defined in standard textbooks would result in Pe and Qe being the equilibrium. Any attempt to achieve a lower price, such as P_1, would result in a shortage as measured by the distance Q_1-Q_2. Price regulation would bring on the need for some way to deal with this shortage. Furthermore, any attempt to establish a higher price, such as P_2, would result in a surplus as measured by the distance Q_1-Q_2. Price regulation would bring on a need to deal with this surplus. As a consequence with large numbers of independently acting buyers and sellers as characterize a competitive market, price setting causes shortages or surpluses. A strong case can obviously be made for leaving the market alone.

Figure 1
Perfect Competition

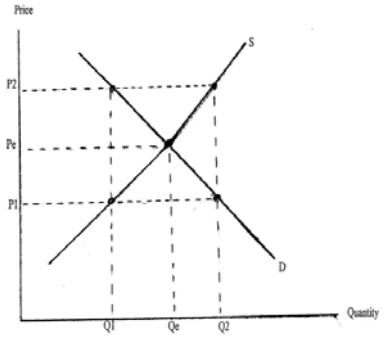
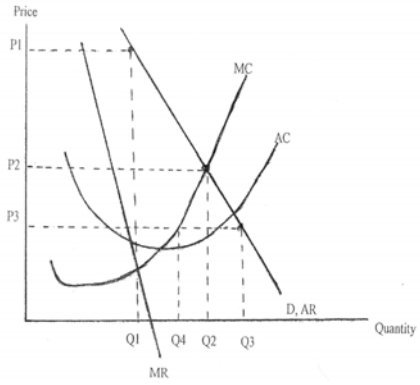


Figure 2
Imperfect Competition



SETTING PRICES IN IMPERFECTLY COMPETITIVE MARKETS

In this circumstance the somewhat well-defined supply and demand functions become less so. In order to explore this type of situation, a model is presented. This model demonstrates the impact of price controls on monopoly or oligopoly firms supplying some good or service.

In Figure 2, standard economic analysis would call for the firm to maximize profit at P_1 and Q_1, and no shortage of the firm's product would exist. If we now impose a price ceiling at P_2, there will be a change in the firm's behavior. The firm's MR curve is now horizontal at P_2 until Q_2 is reached. The marginal or additional revenue in this range is the same as the regulated price. For points beyond Q_2, the firm's MR curve is the original and declines as output become higher. In summary, with the imposition of P_2 as the ceiling price, the firm's marginal revenue curve is horizontal at P_2 until output is at Q_2; at this point MR becomes a vertical line and reverts to the original MR beyond Q_2.

At the ceiling price, the imperfectly competitive firms supply a larger quantity at a lower price than was the situation prior to regulation. The firm demonstrated here still earns an economic profit, but not as much as before regulation. The consumer gets more product and at a lower price than before. Furthermore, as long as the ceiling price is set no lower than P_2, where marginal cost intersects the demand curve, a shortage would not occur.

If the price were set at P_3, a shortage would occur. At any price below P_2, quantity demanded tends to increase as the price is lowered while quantity supplied decreases. An illustration of this is to look at P_3 where quantity demanded is Q_3. The firm would supply only Q_4 since this is where MR=MC at that output level. The consequence would be a shortage. In summary, as long as price is set at level P_2 or above, no shortage of product will tend to result.

Another possibility not illustrated in this paper would be where demand is so weak that the intersection of MC and the demand curve is below the average cost curve. If prices are set below this level, the continued existence of the firm would be in question. A firm must cover all costs in the long run or it ceases to operate.

CONCLUSION

The main point to be gotten from the above simple use of conventional concepts is that government involvement in the regulation of pricing is not necessarily bad. As has been demonstrated, when monopoly elements exist, requiring a reduction of price can result in an increase (not decrease) in the quantity supplied. What essentially happens is that part of the return to the monopolist for restricting output is removed and no shortage occurs.

The drug industry makes a consistent argument that reduced prices and government price controls would decimate profits and destroy their incentive for research. Ending the exploitation would not necessarily end the industry's profits. Research is their long-run life-blood and would likely continue as long as they exist as an industry. What would likely happen in the face of price controls would be a short-run fall in profits to more normal levels, and like competitive markets, life would go on. Shifting from a pattern of oligopoly (monopoly) where firms can dictate prices to a more competitive pattern seems consistent with the view of the market economy developed by Adam Smith. As stated earlier, life would go on, and probably be better from all points of view.

Some advocate, increasing interstate competition among insurance companies as an alternative to a more comprehensive health care bill. Interstate competition faces the hurdle that carriers openly collude with each other and wind up following largely uniform practices. Making it virtually impossible to increase competition is their immunity from antitrust regulation. The really perplexing question concerns who can best make the pricing decision—health care industry bureaucrats or government regulatory bureaucrats. Neither choice is perfection.

An excellent and ideal long-run outcome would be a health-care industry which is socially responsible and earning normal profits. The outcome desired is no more and no less than the outcome predicted for the competitive market. In a world of imperfect competition this outcome seems very unlikely in the absence of government regulation. The issue is really "how much."

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