An Analysis of Health Care Systems in Two Countries Through Determining Public Satisfaction

Sarah Kleinknecht
The College of William and Mary. Williamsburg, VA. USA.

According to the World Health Organization's twenty-first century health care system rankings, Costa Rica ranked 36th in terms of health system performance, while the United States ranked 37th in the world.1 The rankings are based on five composite indicators determined by public health experts: (1) overall level of population health, (2) health disparities and inequalities, (3) level of health system responsiveness, (4) distribution of responsiveness within the population and (5) distribution of financial burden within the population.1 To understand what makes one health system better than another, it is pertinent to analyze them from different perspectives. Public health experts may be able to quantitatively determine if one system is better than another, but it is necessary to also incorporate viewpoints of the general population.2 The purpose of this research is to investigate why the United States and Costa Rica are so closely ranked, even though their health systems are so different. To do so, interviews were conducted in both countries to determine public satisfaction with health care. Through statistical analysis, this study shows that there is a significant difference between the public satisfaction of participants in the United States and Costa Rica with the health care systems. Thus, in order to truly understand how effective a health care system is, it is beneficial to consider public opinion in addition to expert views. Future research may benefit from incorporating a larger-scale version of this study with the World Health Organization's findings, so as to combine public satisfaction and expert opinion and more effectively analyze health systems.

Introduction

This study serves to supplement data from the World Health Organization (WHO) report, "Health Systems: Improving Performance" (2000).[1] It is intended as a pilot study to determine public satisfaction with the health care systems of the United States and Costa Rica, an additional factor that should be taken into account when establishing why these two extremely different countries with fundamentally opposite healthcare systems ranked one after the other in the WHO analysis.

Analysis of World Health Organization (WHO) rankings

A health system is defined as comprising all the organizations, institutions, and resources that are devoted to producing health actions.[1,3] Health actions are any efforts—whether in personal health care, public health services or intersectoral initiatives—whose primary purpose is to improve the health of the population.[1,3] According to the World Health Organization, the success of a health system is measured using two metrics: goodness and fairness.[1,2] Goodness is the best attainable average level, and indicates that a health system is responding well to what people's expectations.[1,2] Fairness is the smallest feasible differences among individuals and groups, and is measured in how well a system responds to everyone, with the goal being equality without discrimination.[1,2] These are the basis of the WHO ranking system that was established in order to measure the performances of different health systems around the world.

The goal of the WHO report was to quantify what makes a health system good, what makes a health system fair and whether or not a health system performed as well as it could.[1,2,4] The actual WHO rankings, done by public health experts, took into account the aforementioned five composite indicators in an attempt to index health care systems' success.[1] Each country was measured on levels of attainment and performance.[1,2,4] Attainment serves as a measure of what was actually achieved in reference to the three goals, while performance was the best result that could possibly be accomplished with the same resources, i.e. what the system would achieve in an ideal situation if it were not for poor structuring, misuse of power, inefficient organization and inadequate funding.[1]

This turn-of-the-century analysis was the first undertaking of a controversial, subjective topic.[1] WHO arrived at a conclusion and attained a "reasonably approximated" ranking of 191 countries' healthcare systems.[1]

The Two Health Systems: Characteristics and Current Problems

The United States is unusual in that it is dominated by a private health care system. As of 2012, the US financed 48% of its health care publicly, meaning that 52% was private, or dependent on a source other than the government.[5] In contrast, Costa Rica has nearly 83% of its system financed by public providers, making it a predominantly public system.[6] The United States is the only industrialized country without nationalized health care.[4] And yet, the U.S. is at the forefront of innovation and research: it is responsible for over half of the world's major medications in the past two decades, accounts for 80% of major medical advances in the past 30 years and is the country with the highest survival rates for some of the most prevalent diseases worldwide including cancer and cardiac disease.[4] Meanwhile, as a government-run national

system and "one of the most effectively universalized health care systems in Latin America," the majority of Costa Rican citizens are provided extensive health coverage affording them access to any and all medical services needed, an accomplishment that very few countries in the world have achieved.[7]

For the United States specifically, having a private system means that insurance is mainly employer-sponsored and administered by private companies. As of 2013, 53.9% of American citizens had this type of insurance.[8] In Costa Rica, the government is the main insurer and the provider of health care service. Two main governing bodies administer health services: Caja Costarricense de Seguro Social, or Costa Rican Social Security Administration (CCSS), and the Ministry of Health (MOH).[7,9,10] United States health care is financed individually, either through employers and employee premiums or by individual insurance premiums involving some out-of-pocket coverage.[11] On average in America, it costs $4,479 per individual per year for insurance, or $12,106 for a family.[4,11] Meanwhile, CCSS has multiple types of beneficiaries and health insurance is financed by tripartite contributions from employers, workers and the state.[7,9] This means that for a typical wage-earning individual, 22.91% of his or her salary goes to the social security system.[7,9]

Despite the predominantly private system in the United States, some public insurance is also available. Along the same vein, Costa Rica has some private aspects in addition to its public insurance. The public insurance aspect of the United States health care system is primarily focused around two main programs financed through federal and state taxes: Medicare and Medicaid.[11] Medicare is an entirely federal program that primarily covers people over the age of 65, whereas Medicaid is a state-administered program that is fairly comprehensive, but not universally accepted by all health practices and is only available to a select few, primarily low-income adults.[11] Meanwhile, to supplement the public aspect in certain areas, Costa Rica also has some private insurance available that is generally affordable and high-quality.[7,10] Some people purchase private insurance to avoid notoriously long waits for services such as elective procedures and other social security clinic delays.[7,9] As of 2008, about 25% of the Costa Rican population had private insurance in addition to social security.[12]

Both systems attempt to provide top-level service to the entire population, but are unable to do so primarily due to rising costs and lack of access to care. This is not unusual; these are the two main issues facing the majority of healthcare systems around the world.[13] The United States spends the most money on healthcare in the world, in terms of per capita and percentage of GDP.[4] And yet there is still a large burden of debt, increased taxation and uneven quality of care in that many Americans still do not receive the standard of care that they should.[4,8] The public aspect of the United States' system is failing. Medicare and Medicaid have upwards of $50 trillion in unfunded liabilities.[4] Americans may receive high quality care, but this care is extremely uneven in its distribution, where insurance is necessary to achieve the best medical treatments as otherwise costs are inconceivable.[4,8] The large number of uninsured Americans is therefore a major problem, one that must be addressed in order for the health care system to perform at its best and achieve the overall goal of having a healthy population.

On the other hand, the Costa Rican system was designed for a working population, but due to recent population growth as a result of constant migration flow, many citizens live in poverty, which is detrimental to the efficiency of the system.[7] Additionally, the increased privatization of health services in Costa Rica threatens the quality of the system that currently exists.[12] It is a system based on primary assistance that, due to the increasing prevalence of chronic illnesses, is facing high demands of specialized treatment.[12] Thus, although the manifestation of these issues may be different in the two countries, in general the systems face very similar problems that significantly affect the overall quality of health care in these countries.[4]

Why the WHO rankings are insufficient

Interestingly the United States outranked Costa Rica in nearly every category in terms of composite indicators, as shown in Figure 1, and yet the two very different systems are overall placed 37th and 36th in the world.[1,2] Most significantly, the United States was first in level of health system responsiveness, while Costa Rica ranked 68th.[1,2] In terms of overall level of population health, the United States was 24th and Costa Rica was 40th.[1] Fairness in financial contribution was close, with the United States ranking 54-55th and Costa Rica 64-65th.[1] And for overall goal attainment, the United States was 15th and Costa Rica was 45th.[1] In contrast, in terms of overall performance on level of health, Costa Rica ranked 25th, while the United States was 72nd.[1]

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Each of these factors contributed to the final rankings differently, and the full breakdown can be found in Annex Tables 5-10 of the World Health Report.[1] But most importantly, overall level of population health, health disparities and inequalities and distribution of financial burden within the population accounted for 25 percent each of the total goal achievement ranking.[1] And the remaining 25 percent was split between the final two indicators: level of health system responsiveness, and distribution of responsiveness within the population.[1] These factors all contributed to each systems' attainment of goals, which was further evaluated to establish the overall performance. This measure of performance, the aforementioned best result that can possibly be accomplished based on the specific amount of resources available, was the primary endpoint of the analysis.[1,2] The overall ranking of the United States indicates that it has been unable to achieve what it should be able to with the resources that it has, most likely as a result of inefficient organization and rising costs[1,4]. According to the WHO's metrics, the United States should be able to provide top-level and affordable care to a more significant percentage of the population.[1,4] Costa Rica is relatively successful in doing so, thus it has a higher level of performance.[1,4]

Although comprehensive rankings were achieved, the accuracy of such an analysis must be called into question. Despite its best efforts to remain impartial, the WHO study is based solely on the individual public health experts completing the study, whereas even the Director-General of the WHO specifically addresses the fact that "answers will depend on the perspective of the respondent" in the introduction to the World Health Report.[1] Therefore, the flaw lies in using only experts in the field to make these rankings and not incorporating multiple per-

spectives. Public opinion in terms of satisfaction with health care should be taken into account. Even though public opinion can be difficult to quantify and often contains bias, it is still an important resource. Public satisfaction is important to health policy and government decision-making regarding health care and is therefore paramount to the success of a complete analysis.

Study Design

Setting and Sample Population

The process for determining public satisfaction with the Costa Rican and American health care systems involved surveying individuals in each country for their opinions on the system. Due to the logistics and time constraints of this pilot study, only one location in each country was utilized for sampling. Thus, in Costa Rica, the suburbs of San Jose were chosen, as San Jose is the capital of Costa Rica and a major metropolitan area, so both the city itself and surrounding area exhibit a diverse working-class population, many of whom do not have significant access to health care. The main subjects in the United States were also a varied group of working-class individuals, specifically those visiting the emergency room at a non-profit hospital in Hampton, Virginia. A large percentage of the patient population in this city are not insured and do not have regular access to medical care, so they come to the emergency room for primary care needs. As a result, this area was the most equivalent to the region explored in Costa Rica, because both were intended to provide for the general population.

Measures of Public Satisfaction

Throughout the two weeks in each country, two different types of surveys were conducted in order to measure public satisfaction. For the first (short) survey that simply asked participants how satisfied they were with their health system, 25 individuals participated in each country. They were randomly selected from the subject population, with the intent of creating a study population with a variety of ages, genders and backgrounds – as heterogeneous as possible for the specific sample size. And for the second (long) survey, three individuals were chosen in each country. Selection of participants was similar to the short survey, but also depended on the participants' willingness to discuss more extensive personal information, so only three were sampled in each country. The second survey served as an interview and was intended to gain a more general and all-encompassing viewpoint to supplement information from the short surveys.

Prior to surveying, each individual was asked to sign a consent form, provided in both English and Spanish so that there were no issues with language barriers. The first type of survey was solely a quantitative measurement, asking people to rate the health care system on a scale of one through ten, one being extremely dissatisfied and ten being very satisfied with the system. The survey asked participants to rate the overall system, taking into account both their personal experiences and their thoughts of the system in general based on prior knowledge obtained through resources such as education or the experiences of other individuals. Other details that were gathered about each person in order to get a better representation of the population included age, gender and their amount of exposure to health care in terms of the frequency with which the individual sought medical attention of any sort in a typical year.

The second survey was a much more qualitative analysis of individual's experiences with the health care system, going further in depth as to why each individual ranked the system a specific way, in addition to collecting general health-related information about the person. These

1) Please rate the health care system of The United States/ Costa Rica on a scale of 0-10, 0 being extremely dissatisfied (bad/sad) and 10 being very satisfied (good/happy). a) Why did you choose the number you did? (i.e. why so high/low?)
2) How old are you?
3) Gender (to be observed, not an actual question)
4) How frequently do you seek medical care? (i.e. how many times you go to the doctor in an average year?)
5) What sort of health problems do you have, if any? (For example, do you have diabetes, high blood pressure, cancer?)
6) Do any of your close family members (mom, dad, siblings, children, grandparents) have any health problems? (For example, do they have diabetes, high blood pressure, cancer?)
7) Are you employed? If yes, what do you do for work?
8) What number would you give the Costa Rican/United States health care system knowing whatever you do or do not know about it? (Using the same scale as in question 1)
9) What type of doctor do you usually go to? (for example: clinic, ER physician, PCP, cardiologist)
10) How much do you trust your doctor to: a. Always tell you the truth? b. Provide you with accurate, up-to-date medical information? c. Make excellent medical judgments on your behalf? d. Do everything medically that should be done to ensure the best possible result? e. Tell you if a mistake was made about your treatment? f. Put your medical needs above all other considerations, including costs? g. Listen well so he/she understands your needs and concerns? scaling: 5= completely 4=mostly 3=somewhat 2= a little 1= not at all
11) What is the one thing you would like to change about the health care system? If multiple answers, which is the most important change?

Figure 2: Extended survey questions. These are the questions that were asked to participants in the longer interviews. Three individuals were interviewed in both Costa Rica and the United States. Question 10 is an adaptation of previous physician trust studies, based on various physician trust scales18, 19, 20, 21.

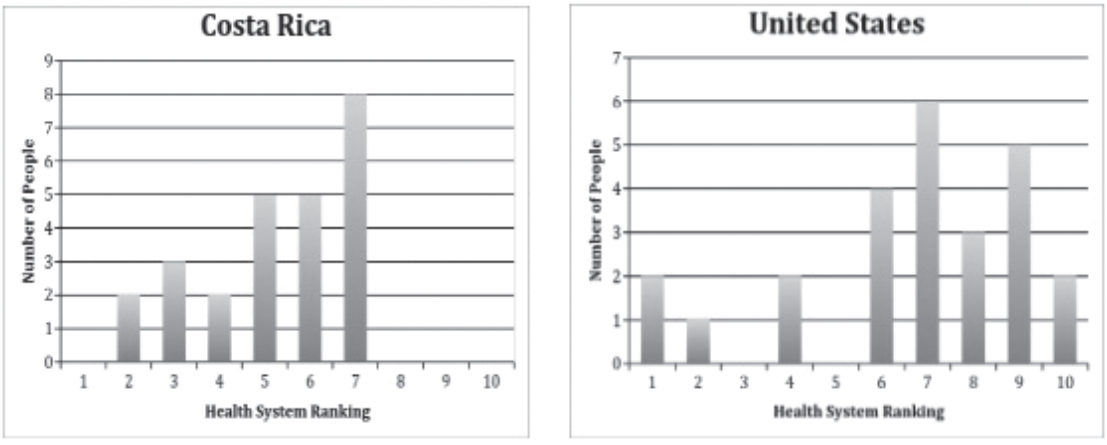

Figure 2: Graphical representation of rankings. These tables summarize the results that were obtained in Costa Rica and the United States. They show the number of people that gave each numerical ranking for their respective country. The United States has more widespread rankings, with people more dissatisfied (thus giving it a 1) but also more satisfied (ranking the system a 10) in comparison to Costa Rica, which was ranked between 2 and 7. It needs to be acknowledged that these results are subjective, in that one person's numerical score of 1 is not necessarily equivalent to the 1 that another person might give. But overall they are able to provide a general view of public satisfaction with health care in each country.

	Health		Responsiveness		Fairness in financial contribution	Overall goal attainment	Health expenditure per capita	Performance on level of health	Overall system performance
	Level (DALE*)	Distribution	Level	Dist.					
Costa Rica	40	45	68	86-87	64-65	45	50	25	36
USA	24	32	1	3-38	54-55	15	1	72	37

Figure 1: Health system attainment and performance rankings of the United States and Costa Rica, (Adapted from the World Health Report 2000). This table shows the results of the full rankings, according to WHO, for both the United States and Costa Rica. The number values are rankings out of the 191 countries. The US has higher rankings for all categories, except for performance on level of health, which renders its overall system performance below that of Costa Rica. *DALE stands for Disability Adjusted Life Expectancy. Each of these values in the table comes from a long list of contributing factors. The further breakdown of each section can be found in the World Health Report 2000 Annex Tables 5-10.

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Figure 4: Comparison of rankings and participant demographics. This table shows the mean, mode, maximum, and minimum rankings given for both Costa Rica and the United States. Age and gender information about participants is also provided.

$$t = \frac{M_{CR} - M_{USA}}{\sqrt{\left[\frac{\left(\sum X_{CR}^2 - \frac{(\sum X_{CR})^2}{N_{CR}}\right) + \left(\sum X_{USA}^2 - \frac{(\sum X_{USA})^2}{N_{USA}}\right)}{N_{CR} + N_{USA} - 2}\right] \times \left(\frac{1}{N_{CR}} + \frac{1}{N_{USA}}\right)}}$$

$$t = \frac{5.28 - 6.68}{\sqrt{\left[\frac{\left(764 - \frac{132^2}{25}\right) + \left(1273 - \frac{167^2}{25}\right)}{25 + 25 - 2}\right] \times \left(\frac{1}{25} + \frac{1}{25}\right)}}$$

$$t = -2.289$$

Figure 4: T-test calculations. A T-test was performed on the results, to determine if there was statistical significance. This is the formula and process that was utilized. A t-ratio of -2.289 with 48 degrees of freedom corresponds to a p-value of 0.02653, which is less than 0.05, and therefore the null hypothesis can be rejected, indicating that the results are significant.

interviews were more encompassing than the previous surveys, taking around 10 minutes per person depending on the individual (the specific questions asked in these interviews are shown in Figure 2). As these interviews were difficult to quantify, their primary purpose was to simply add to the shorter surveys by providing insight as to why individuals are satisfied or dissatisfied with their respective health system. Thus they did not serve as a direct comparison with the WHO rankings, which were based on the five composite indicators: overall level of population health, health disparities and inequalities, level of health system responsiveness, distribution of responsiveness within the population and distribution of financial burden within the population.[1]

Results

The data was collected over a two-week period of research in each country (see Figure 3). The short surveys provided some information pertaining to both health systems, indicating that both Costa Rican and American citizens are fairly satisfied with their health systems overall, with an average satisfaction rating of 5.28 and 6.68, respectively, as shown in Figure 4. A T-test was utilized to determine the accuracy of the hypothesis; specifically, that there is a difference in public satisfaction with the health care delivery systems in Costa Rica and the United States. The null hypothesis, that there is no significant difference between public satisfaction with the health care systems of the United States and Costa Rica, was tested. With 48 degrees of freedom, the obtained t-ratio of 2.29 corresponds to a p-value of 0.0265.[17] This value is less than 0.05, which means that the null hypothesis can be rejected. Therefore, the results of this study are statistically significant, and there is a difference between the public satisfaction of participants with the health care systems of these two countries. Full calculations can be found in Figure 5.

In addition, the longer interviews gave insight into the pros and cons of both countries' health systems. All three interviews for each country were conducted with people of different ages, genders and careers, and yet they exhibited some important similarities in both the United States and Costa Rica. Participants in both countries discussed the reasoning behind their rankings of the health systems, most importantly by elaborating upon the major issues that the systems need to address in order to perform at a higher level. The biggest problem with the Costa Rican system, as indicated by these interviewees, is a lack of efficiency—there are too many issues with the way that the system is run, such as inadequate funding and an insufficient number of physicians, which lead primarily to long wait times that are a major detriment to the health and satisfaction of the population. Meanwhile, the main problem that individuals had with the American system was that it has become more about how to deal with rising costs, rather than focusing on providing care to the entirety of the population. In essence, money is the most important aspect of the United States health system, and the actual health of the population comes second.

The discrepancy between those who receive top level care and those who do not best explains why the United States and Costa Rica are ranked next to each other in the WHO analysis.[1,2] Even so, throughout this study the actual medical care in the United States was said to be better overall—an aspect that all participants, both Costa Rican and American, said overshadows any other issues with the system. As a result, it was determined that the United States' health system exhibits a higher level of satisfaction amongst participants than that of Costa Rica, although due to the small sample size it cannot be concluded that this is true for the entirety of each country.

Limitations

This pilot study, just like all other studies attempting to quantify a subject as complex as health care systems, has some limitations that should be acknowledged. Primarily, the focus group in each country was a major bias factor. First of all, it is difficult to find two exactly similar locations in such different countries. A better, more accurate analysis could have been done with a more even distribution of factors such

as age and gender with a larger sample size. In terms of location, using only one in each country is very limiting, as different places have varying standards of care, public perceptions and overall health institutions. There is also the possibility of potential response bias due to the qualitative rather than quantitative nature of the study.

Most significantly, the small sample size is a limitation, as 25 people is not entirely representative of countries with populations of 300 million in the Unites States and five million in Costa Rica. Thus, it is not possible to generalize the results to the entirety of the two countries; rather, the intent of the study is the more notable aspect. As with most studies, a larger subject population—specifically by utilizing multiple locations throughout these countries—would have provided more information and made the study more universal. In order to determine an accurate account of health system performance, a much larger version of a study such as this one could be incorporated with the WHO's findings, so as to combine public satisfaction and expert opinion.

Discussion

The World Health Organization defines health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity."[3] Both the United States and Costa Rica have established effective health systems that run very differently from one another, rendering them an excellent choice for further investigation. In contrast to the WHO investigation, this study focused on public opinion in both countries rather than public health expertise to determine the performance of health systems.[2] The intent was to supplement the WHO results rather than replace them, as both public satisfaction and the perspective of experts should be considered together for the best analysis.

This study supplements the WHO report by also attempting to quantify what makes a good, fair and well-performing health system, but through population-based research design. The health system goals created by WHO involving good health, responsiveness to the expectations of the population, and fairness of financial contribution were most extensively addressed in the long interviews but can also be surmised from the basic rankings of the systems provided by short survey participants.[1] In the vernacular of the WHO investigation, this pilot study focused on goodness, indicative of how the health system responds to expectations.[1,2,4] The results demonstrate that although individuals in both countries view their health systems as generally good, there was a higher level of satisfaction among participants in the United States than in Costa Rica.

As the WHO based its rankings on measures of attainment and performance, the primary measure utilized in this study was a combination of the two, where participants specifically addressed the overall achievement of their respective health system in terms of how satisfied they were with the health care provided.[1] Analysis of public opinion indicates that the United States has a level of attainment and performance that is statistically higher than that of Costa Rica. Yet this may not be practically significant, as the discrepancy between the average rankings, 5.28 and 6.68, is fairly small on the scale from one to ten. Thus, as previously mentioned, a larger-scale study would be much more telling in its results with regards to overall public satisfaction with health care in these countries.

While the WHO analysis is more extensive, this pilot study achieved the goal of providing additional analysis in a complementary capacity. The additional perspective provided by a larger version of this study could prove beneficial to the analysis of health systems in their entirety. In the World Health Organizations' own words, "peoples expectations of health systems are greater than ever before," so it is necessary for the systems to evolve accordingly, but first it is important to determine how to most effectively create positive change.[1] Patient, provider, and institutional characteristics are all necessary factors and must be taken into account for better performance.[15] As a result, it is pertinent to evaluate the opinion of a larger group of individuals on the efficacy of their health care systems, and these methods should be further investigated and possibly incorporated with the WHO report for a more complete analysis of health systems. Public opinion is difficult to quantify, but as portrayed by this study it can provide valuable information about health system performance. Rising costs and lack of access to care are increasingly prevalent in health care systems around the world, so it is vital to analyze the systems in order to determine the causes of these quality issues. Studies such as this serve only as a starting point; much more extensive research must be done in order to further address health system performance, find solutions to these problems, and ensure that systems around the world are acting efficiently and providing high quality care.

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