SOCIAL DETERMINANTS OF HEALTH IN EDUCATION AND PRACTICE: AN ANALYSIS OF U.S. PRIMARY CARE PHYSICIANS' STRUCTURAL COMPETENCY

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On my honor
I have neither given nor received
unauthorized aid on this thesis.

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ABSRACT

Recent healthcare reforms have reduced the numbers of uninsured, initiated programs to restrain healthcare spending and have presented the opportunity for a reassessment of population health. Literature spanning the last several decades has made clear that health disparities in the U.S. are driven by social determinants and are reproduced across generations. Medical education, however, has traditionally not trained physicians to identify structural barriers to health, rather patient behavior has been the emphasis. This study analyzes the presence and variation of structural competency among practicing U.S. doctors. Ordered logistic regression and descriptive statistics are used to assess survey data from 1000 primary care physicians in the U.S. I report on which characteristics of physicians themselves—gender, age, exposure to at risk populations—impact their likelihood of identifying social determinants as important to patient health and whether the characteristics of their patient pools (percentages of minority and low income patients) also impact their perceptions and practice. Additionally, I present findings on which factors physicians identify as most negatively impacting their patients' health, demonstrating discrepancies in theoretical and practical applications of structural competency.

Recent healthcare reforms have reduced the numbers of uninsured, initiated programs to restrain healthcare spending and have presented the opportunity for a reassessment of population health. Medicaid expansions and government subsidies through the Affordable Care Act are estimated to bring 27 million of the previously uninsured into the healthcare system by 2017 (Manchanda 2013). And though data from its first year of implementation is still sparse, promising trends in the improvement of health outcomes and slowdowns in healthcare spending are being reported (Sanger-Katz 2014). However, little attention has been given to the ways in which physicians will treat this influx of vulnerable patient populations. The inadequacy of medical training to provide the current physician workforce with tools to address health from a perspective of prevention and sustainability, rather treatment and diagnosis is problematic and demands further research.

While the ACA is progressive in its theoretical promise of transforming access to healthcare from a privilege to a right, the U.S. is doing little to promote tangible structural support for better health. As a country, we are investing less in infrastructure than ever before and doing even less to ameliorate income, environmental, and resource-based inequalities—which are the ultimate informers of health disparities (Metzl and Hansen 2013). The policy is being integrated into a system that is driven by diagnosis and financial gain—elements that are vitally important, but are also limited in delivering and supporting wellness. Current medical professionals, educated pre-reform, primarily focus on the management of "sick care" instead of health promotion. This system of tertiary prevention—a "downstream" approach— has been built up since the late 19th century and the outcomes are neither sustainable nor favorable in terms of economic returns or human

suffering; healthcare spending represents 18 percent of our GDP, yet, among all nations, the U.S. ranks 37th in health status (Manchanda 2013).

Experts in healthcare and policy agree on five general health-defining forces: genes and biology, behavior, medical services, social environment and physical environment. The latter two, together, comprise what are commonly referred to as social determinants of health— both predict and impact wellness significantly more than medical care itself (Manchanda 2013). Even when disease does not stem from an environmental element, the course of the illness—the management, healing and relapse—is largely dictated by these upstream structural factors. Further, behavior, which for decades has been the focus of major health intervention campaigns, is inextricably tied to and defined by social determinants. Yet, even though American physicians have never had more access to research on structural health inequities, the ways in which they are trained and therefore practice emphasize patients' individual behaviors, one-on-one clinical interactions and ignore the social context of patients' lives.

Leaving social determinants of health out of the medical encounter disadvantages every American, but disproportionately fails underprivileged populations. Healthcare reform has provided access to care to millions of the uninsured—people who were previously not afforded coverage through their employers and/or did not have the means to purchase private plans. In other words, waves of low income and working class populations are entering the system. If the goal of a medical encounter is to better the health of a patient, of a community—of the nation—then social and environmental structural factors can no longer be an elective—they must be at the forefront of medicine.

Cultural competency training has been part of the general medical school curriculum for several decades now and it has undeniable value; physicians are skilled in listening to individualized stories and identifying cultural barriers within their patients' lives (Metzl and Hansen 2013). However, widespread cultural competence has not resulted in a reduction of health disparities (Metzl and Hansen 2013). Rather, inequalities in health have continued to widen, making clear that a gap in practice and approach exists; doctors are not addressing the structures that weaken their patients' health—the social, political, and economic systems that constrain individual behavior (Metzl and Hansen 2013). Paradigms surrounding health, medicine and social responsibility are shifting (be it slowly) as evidence supporting the importance of *structural competence* grows—a concept coined by Meztl and Hansen (2013). Structural competency seeks to promote a recognition for how culture and structure, in the medical setting, are mutually co-implicated in producing stigma and inequality; it is an approach that demonstrates the limits of biomedicine and pushes physicians to view their patients not just as a collection of organ systems, but as people whose health relies on the conditions in which they live (Metzl and Hansen 2013). Blame for individual behavior is replaced with an understanding for the social barriers that patients cannot control—an upstreamist perspective on health. Reforms to honor structural awareness are beginning; changes in the 2015 MCAT are reflective of a more socially minded approach to medical education, one that values social determinants and a public health approach in conjunction with biomedicine.

Health providers who practice in the current system are under pressure to adapt to a new system and new patients—and they are the focus of this study. Using a 2011

national survey of primary care providers, this study aims to address a series of questions: To what extent are current physicians sensitive to and/or aware of social conditions as health impacting? What conditions do physicians identify as most relevant? Finally, what is the association between the characteristics of doctors themselves—gender, age, exposure to at-risk populations—as well as the characteristics of their patient pools that affect doctors' perspectives on the importance of social conditions in terms of patients' health?

REVIEW OF LITERATURE

I first review the literature on social determinants of health and on the presence and implications of health disparities in the U.S. and go on to review literature on medical education, profession and differences in practice.

Fundamental Causes

Health disparities in the U.S. are well documented and have persisted over time. Social determinants of health—the circumstances in which people live and work—provide a framework for what Link and Phelan (1995) define as fundamental causes; factors that, through a variety of mechanisms, impact access to resources that help individuals avoid disease and their negative consequences. The social reproduction of health outcomes drives disparity; advantage and disadvantage are most often replicated throughout the life course and the same social patterning continues across generations (Blane 2006). The foundation of this patterning is not defined by the time spent in the medical system; medical care itself only accounts for about 10 percent of variation in

health outcomes (Manchanda 2013). Rather, trajectories of health and wellness are produced by our social and physical environments—the circumstances we are born into and live in everyday.

Socioeconomic status—traditionally defined by education, income and occupation—is a well-established fundamental cause of morbidity and mortality (Adler and Newman 2002). Lower SES is consistently related to worse health outcomes, including lower life expectancy and higher mortality rates for both adults and children (Link and Phelan 1995; Schulz 2000; Smith 2004). Inequality, however, is not confined to the impoverished; the health gradient is present throughout the social hierarchy, with standards of health progressively diminishing towards lower social strata (Marmot 2006).

Education level, in many ways, defines occupational, economic, and social opportunities, which ultimately impact health. Smith (2004) found that even when current health conditions are controlled for, persons with less schooling are much more likely to experience poor health, a pattern that persists into old age. Limited education may limit exposure to information about risk, but simultaneously, people with low levels of education are likely to be locked into harsh neighborhoods characterized by food deserts, few recreational facilities, and higher levels of advertising for tobacco and alcohol (Adler and Newman 2002). Furthermore, a 2002 study found evidence that medical interactions vary by education level, with less educated patients receiving fewer preventive services than their more educated counterparts (Fiscella, Goodwin and Stange). Ultimately, education influences health because it propagates social inequalities in employment, job and economic statuses (Ross and Mirowsky 2008).

Employment is integral to patterns of wellness as the employed, on average, have better health than the unemployed (Adler and Newman 2002; Ross and Mirowsky 2008). However, employment in itself is nuanced. Lower-status jobs expose workers to physical risks including occupational injury and exposure to toxic substances in addition to psychological burden—job strain and lack of control over work. Stress that results from menial job positions and lack of opportunity for upward mobility has been identified as contributing to poorer health among underprivileged populations. Individuals who experience a physiological stress response in their daily life due to circumstance are at a higher risk for depression, infection, diabetes, hypertension, heart attack and stroke (Brunner and Marmot 2006).

In addition to work environment, home and neighborhood environments extensively impact health through biological pathways and access to resources. From conception, maternal environment shapes an individual's health trajectory. Wadsworth and Butterworth (2006) found that a poor environment is associated with poor maternal diet, substance abuse and a raised risk of infection during the prenatal period; mothers lack access to necessary foods and healthcare, and are exposed to risk factors in their environment—consequently, low birth weight is associated with marginalized populations. In 1986, Dutton reported that nonwhite infants die at approximately twice the rate of white infants and that this racial gap in mortality continued into adulthood. In 2013, the CDC repeated a similar statistic: the infant mortality rate for non-Hispanic blacks was more than double the rate for non-Hispanic whites, indicating the constant negative impact of a poor environment on maternal and fetal health. Exposure to damaging agents in the environment, including lead, asbestos, carbon dioxide and

industrial waste varies with SES—contributing to the health gradient both from a social and biological perspective (Adler and Newman 2002). Epigenetics, an emerging field of science, is revealing the connection between environmental exposures, the regulation of our genes and the long-term impact of such heredity (Manchanda 2013).

Literature and current public health statistics consistently demonstrate that minority populations fair worse in measurements of morbidity and mortality when compared to their white counterparts, making race one of the foremost social determinants of health. In terms of self-rated health, approximately twice as many blacks and Hispanics report being in fair or poor health than do whites (Adler and Stewart 2010). Rates of disease also reflect disparity. In 1995, Link and Phelan reported that blacks had higher rates of mortality, renal failure and premature stroke—a finding that remains consistent almost 20 years later. A 2013 CDC report states that non-Hispanic black adults are at least 50% more likely to die of heart disease (the leading cause of death in the U.S.) or stroke prematurely than their non-Hispanic white counterparts. The stress response discussed above also appears in literature pertaining to race and health. Minorities, particularly African Americans, have historically experienced oppression and discrimination, which, to a certain degree, persists today (Schulz 2000). As a result of experiencing daily micro aggressions and discrimination, stress becomes a part of the everyday response and contributes to the more rapid health deterioration in African Americans (Schulz 2000). In addition to poorer health patterns, there is also strong evidence that racial and ethnic minorities receive lower quality of care and are less likely to receive routine medical procedures compared to white Americans—this inequality holds even when variations in insurance status, income, age, co-morbid conditions and

symptom expression are controlled for (Smedley, Stith and Nelson 2003). Data supporting the presence of structural health inequalities is vast, yet physicians receive minimal training on how to address social determinants of health with their patients.

Medical Education, Profession and Practice

Though, in the 19th century, public health and biomedicine emerged as collaborative fields with a mutual focus on social conditions, an antagonism between the disciplines began in the 20th century (Brandt 2000). This split in perspectives has largely characterized the American healthcare system; Brandt asserts, "the very nature of the biomedical paradigm was to uncouple disease from its social roots," while the public health paradigm continued to value social determinants as fundamental to health (2000: 711). The majority of current physicians are trained in strategies of tertiary prevention—focusing on minimizing physical deterioration among those who are already ill. Additionally, a fee-for-service model that caters to billing for costly procedures discourages providers from offering preventive services, limiting comprehensive care (Manchanda 2013). Consequently, a minority of physicians practice primary prevention—strategies designed to keep people from becoming ill (Weitz 2004). In order to present a trajectory of barriers to upstream healthcare, I review studies on medical education and present literature on primary care and specialization.

Education

In an effort to acknowledge diversity conflicts between patients and doctors, cultural awareness was integrated into standard medical education guidelines several decades ago (Metzl and Hansen 2013). Yet the premise that culturally sensitive physicians reduce patients' health barriers and improve their health outcomes has not held true; rather, health disparities continue to grow in the U.S. (Metzl and Hansen 2013). Most recently, the concept of *structural competency* has emerged as a model for medical training that would teach physicians to understand their patients' stories and symptoms in a structural framework, recognizing that social determinants of health shape wellness and illness outside of the doctor patient interaction (Metzl and Hansen 2013). Changes in the 2015 MCAT to include Psychological, Social and Biological Foundations of Behavior are also reflective of a transition towards a structural perspective in medical education (Association of American Medical Colleges). As structural competency models are just emerging, most literature to date focuses on studies of cultural competence, reflecting the framework of the current system and providing insight into how practicing physicians were trained.

A 1992 survey of American medical schools reported that graduates felt "ill-prepared" to provide culturally sensitive clinical care. Furthermore, graduates felt uncomfortable learning about the social causes that impact health outcomes and acknowledged their own resistance to training, identifying cultural competence as a "soft science"(Robbins et al. 1998). A 2003 study reported that medical students and faculty members saw it as desirable to be color-blind, gender-blind and class-blind in their medical training and future careers. Moreover, students indicated that they saw social

factors as having little or no effect on their experiences in medical school or on the ways physicians practice medicine (Beagan). Even after the medical students in Beagan's (2003) study completed a cultural awareness course, 95% believed that social factors had no effect on them; rather, students were more affected by their own social standing—minority students tended to be more likely to indicate that race or culture had an effect on the medical encounter and health outcomes, and students who identified as working class or poor were more likely to say that class had an effect.

The goal of cultural competence training is to create a healthcare system in which providers are capable of delivering the highest quality of care to every patient regardless of race, ethnicity, culture or language proficiency (Betancourt et al. 2005). Poorer health can be linked to a disregard for sociocultural differences between patients and providers. When social issues pertaining to the context of a patient's life are not reconciled in a clinical encounter, adherence to medical instructions, health outcomes, communication and patient satisfaction have been shown to suffer (Betancourt et al. 2005). Yet, in the culture of medical practice, success is commonly measured in numbers of patients seen, not in numbers of patients who get better—it is a struggle of quantity versus quality weighted by financial pressures (Manchanda 2013).

Physicians' gender has also been studied as a variable that impacts cultural competence and modes of practice. A 1996 study reported that female physicians were significantly more likely to counsel patients about alcohol, tobacco, drug use and sexual behavior—factors that are linked to social determinants of health (Frank and Harvey). On average, male physicians are more conservative than their female counterparts regarding medical policies (Heins et al. 1979). Studies have shown that female physicians are more

prevention oriented than male physicians—possibly because many women entered medical school during an era that emphasized prevention methods or, alternatively, because female physicians tend to cluster around group and salaried practices which might allow them more time and autonomy to offer preventive services (Loughlin et al. 2007).

Primary Care and Specialization

Trends in physician specialization are reflective of a system that focuses downstream, on treating illness rather than seeking ways to prevent it. Primary care—family medicine, general internal medicine and general pediatrics—is associated with a more equitable distribution of health in populations (Shi 1992; Starfield, Leiyu and Macinko 2005). The focus on accessibility, comprehensiveness, coordination, continuity and accountability equips primary care providers to have a better awareness for social determinants. Male and female primary care physicians consistently report more frequent counseling and reviews of health behaviors than specialists (Frank and Harvey 1996). Models presented by Shi (1992) show that numbers of primary care providers are significantly correlated with improving the life chances of a population. Primary care has also been shown to alleviate health disparities. A state-level study, spanning 11 years, found that after controlling for income inequality, the supply of primary care physicians significantly lowered all-cause mortality rates in both African American and white populations; and the association between higher numbers of primary care physicians and lower total mortality was found to be four times greater in the African American population than in the white majority population (Starfield et. al 2005).

Despite evidence for the benefits of primary care in reducing health disparities and improving population health, the numbers of U.S. primary care physicians have been declining. The percentage of third year American medical students who identified primary care as their specialty peaked at 53.2% in 1998 and fell to 20% in 2005 (McKinlay and Marceau 2008). A study regarding medical students' specialization found that students who chose specialty-oriented careers had been especially influenced by medical school faculty and other aspects of their medical education; in contrast, those who chose primary care ascribed little importance to medical school experiences and defined their future careers in terms of values and responsibilities (Taggart, Wartman and Wessen 1987). These findings raise questions about the efficacy of medical training in motivating primary care specialization, as the primary care approach is favorable to alleviating health inequities.

The objective of this study is to analyze the current capacity of primary care physicians to understand and address social barriers to patient health. This question of structural competency is particularly pressing as millions of the previously uninsured start to access healthcare under the ACA. Doctors, especially primary care physicians, will increasingly be exposed to patient populations that embody health disparities defined by barriers that reach beyond biology—environment, socioeconomic status, race—factors that pervade our health in more consistent and drastic ways than time spent in the doctor's office or medical procedures combined. Cost control policy implementations that "pay-for-performance" will also pressure physicians to produce better health outcomes among patients whose health is being impacted by structural forces (James 2012). Using a national survey of primary care physicians I assess what characteristics of

physicians themselves—gender, age, exposure to at risk populations—impact their likelihood of identifying social determinants as important to patient health and whether the characteristics of their patient pools (percentages of minority and low income patients) also impact their perceptions and practice. Additionally, I present findings on which factors physicians identify as most negatively impacting their patients' health, demonstrating different understandings of structural and behavioral barriers.

METHODS AND DATA

This study uses data from the 2011 Health and Wellness Survey; a survey of primary care and pediatric physicians conducted by Harris Interactive on behalf of the Robert Woods Johnson Foundation. For the purposes of this study, primary care and pediatric physicians are not differentiated, as primary care traditionally includes pediatrics. The sample was randomly pulled from the American Medical Association Masterfile to satisfy certain criteria, such as gender, age, characteristics of patient pool, and specialty. Survey results were weighted as needed for region, age and gender; the targets were based off demographic information in the American Medical Association Masterfile. Across the U.S. a total of 20,000 physicians were invited to participate—1,000 doctors completed the survey and they are the focus of this study.

The main goal of this study is to analyze the level of structural competency amongst current U.S. primary care physicians and to demonstrate the necessity for an upstream approach to healthcare. Structural competency, a concept coined by Metzl and Hansen (2013), is defined as the trained ability to discern how a host of issues understood clinically as symptoms, attitudes or diseases also represent the downstream implications

of a number of upstream decisions and factors (i.e. urban and rural infrastructures, environment, access to resources, etc.). The dependent variable, structural competency, is measured by physicians' responses to the question: "My patients' social needs are as important as addressing their medical conditions" with the response categories: "Strongly Disagree," "Somewhat Disagree," "Somewhat Agree" and "Strongly Agree." This measure was chosen over an alternative dichotomous variable, as the categorical nature offers a more nuanced measure of structural competency. Table 1 represents independent variables, including both physicians' demographics as well as the demographics of their patient pools. Physicians were categorized by gender and by the year they graduated from medical school; in this sample, 55% of the respondents were male and 45% were female, with 1990 being the average year of graduation. It should be noted that there was a lack of variables available on the physicians themselves (e.g. race and SES were unaccounted for). Income brackets and percentage of minority patients defined patient pools. Physicians' patient pool averaged 25.3% low-income patients (those making less than $25,000 annually) and 39.7% minority patients.

Table 1. Descriptive Statistics

	N	Mean	Std. Deviation
Medical School Graduation Year	1000	1990	10.8
Percent of Patients Making Less than $25,000 Annually	1000	25.3	23.8
Percent Minority Patients	1000	39.7	26.1
Physicians' Gender	**N**	**Male**	**Female**
	1000	55%	45%

The central analysis of this study is based on ordered logistic regression due to the multi-category ordinal nature of the dependent variable (a measurement of structural competency). The findings are reported in proportional odds ratios, which indicate the estimated change in odds at each categorical break. The reported odds ratios refer to the likelihood of being above each consecutive break for every one-unit change in an independent variable (physicians' gender, year graduated from medical school, percentage of minority patients served and percentage of patients making less than $25,000 annually). The ordered logistic regression was adjusted for sampling weights.

In conjunction with the ordered logistic regression analysis, I present descriptive data—most notably physicians' answers to the question: "Which of the following factors, if any, do you feel are most negatively impacting your patients' health? Please select all that apply." Though there are 16 possible options, in this study I present the percentages of physicians who answered, "Agree" or "Disagree" to eight of the categories. The chosen factors include:

- "Poor environmental conditions (e.g., air and water pollution)"
- "Patients' living conditions"
- "Patients' low household income"
- "Patients' lack of access to adequate health insurance"
- "Lack of primary care physicians in the local community"
- "Patients' lack of education about making health-conscious decisions"
- "Patients' lack of motivation to make health-conscious decisions."

I selected these categories as they represent a range of structural and proximal understandings of health—and, ultimately, demonstrate if there is a difference between how doctors think about structural forces as health impacting, versus how they practice medicine. Does theoretical structural competency have tangible outcomes in patient interactions? To control for the possibility of patient demographics impacting physicians'

responses, I compare responses between physicians serving a patient pool below the mean (25.3) with respect to patients making less than $25,000 annually (higher income patients) and physicians serving a patient pool above the mean with respect to those making less than $25,000 annually (lower income patients).

RESULTS

Table 2 reports results from the ordered logistic regression model. Results are reported in proportional odds ratios. The model examines the impact of physicians' gender, medical school graduation year, percent of patient pool making less than $25,000 annually and percentage of minority patients on levels of structural competency (LR $\chi 2=$ 45.05, $p<.001$). Compared to their male counterparts, female physicians are significantly more likely to exhibit higher levels of structural competency when responding to the question: "My patients' social needs are as important as addressing their medical conditions." Medical school graduation year is also significantly and positively linked to physicians' level of structural competency, with more recent graduates exhibiting greater levels of structural competence. Racial and income demographics of patient pools demonstrate statistically significant impacts on physicians' tendency to report structural competency. Both percentage of minority patients and percentage of low income patients are positively and significantly associated with doctors' level of structural competency. Essentially, physicians serving higher percentages of marginalized populations exhibit structural competency more so than physicians who have less exposure to minority and low-income patients.

Table 2. Proportional Odds Ratios from Ordered Logistic Regression Models

Variables	Social Needs As Important As Medical Conditions
Female	1.57** (.22)
Year Graduated From Medical School	1.01* (.01)
Percent Minority Patients	1.01** (.01)
Percent Patients Under $25,000 Annual Income	1.01* (.01)
Log Likelihood	-1044.38
LR χ2(4)	45.05***
N	1000

Note. *p< .05 **p < .01 ***p<.001 (two tailed tests); Standard errors in parentheses

The ordered logistic model analysis is a strong measure of *theoretical* structural competency—it captures how physicians perceive the role of social factors as health impacting. However, it does not translate into a representation of tangible practice, of how doctors interact with patients and their level of ability to see beyond the individual encounter. The following section of data analyses is descriptive, illustrating physicians' responses to questions that more concretely pinpoint how they understand health.

To better understand the proportions of conceptual structural competency in the sample, I dichotomized the categorical dependent variable used in the logistic analysis into two categories—"Agree" (which included responses to "Strongly Agree" and "Somewhat Agree") and "Disagree" (which included responses to "Strongly Disagree" and "Somewhat Disagree"). As a result, 87% of respondents agreed that addressing patients' social needs is as important as addressing their medical conditions, compared to 13% of responding physicians who disagreed.

However, responses to more specific questions regarding conditions that negatively impact patient health revealed discrepancies and nuance between physicians' understanding of structural and proximal forces on patient health (Table 3). When asked "Which of the following factors, if any, do you feel are most negatively impacting your patients' health? Please check all that apply," 82% of respondents *disagreed* that poor environmental conditions were negatively impacting their patients' health—a question that measures understanding of structural impacts on health. A more equal split in opinion is evident regarding patient income and access to health insurance; 51% of physicians agree that patients' low income is negatively impacting their health and 53% of physicians identify patients' lack of access to adequate health insurance as having a negative impact. Income is understood as a structural factor; while, if we understand health as not stemming from time spent in the medical system, access to insurance is caught midway between a structural and proximal cause of health. The final two categories—"Patients' lack of education about making health-conscious decisions" and "Patients' lack of motivation to make health-conscious decisions"—identify more proximal understandings of health, the opposite of structural competence. Sixty six percent of respondents said lack of patient education negatively impacts health; 75% of physicians identify patients' lack of motivation as most detrimental to their health. While lack of education is representative of both structural and behavioral elements, "lack of motivation to make health-conscious decisions" denies structural competency and instead reflects an individualistic and behavioral understanding of health.

Table 3. Which of the following factors, if any, do you feel are most negatively impacting your patients' health? Please select all that apply.

	Yes	No
Poor Environmental Conditions	18%	82%
Living Conditions	34%	66%
Low Income	51%	49%
Lack Access to Health Insurance	53%	47%
Lack of Primary Care Physicians	18%	82%
Lack of Education	66%	34%
Lack Motivation	75%	25%

N=987

Results of the ordered logistic regression showed that physicians who serve minority and low-income populations are significantly more likely to identify as more structurally competent, therefore, I divided the questions regarding negative impacts into two groups—physicians who serve a higher average of low income patients and those who serve a higher average of high income patients, based on the mean of patients making less than $25,000 annually (25.3). Below, Figure 1 and 2 demonstrate the percentage of doctors who responded "Agree" to the eight categories of potential negative health impacts. The graphs reflect the predicted probabilities of physicians agreeing to each negative factor. Close to 80% of doctors from both groups agree that "Patients' lack of motivation to make health-conscious decisions," most negatively impacts health, illustrating a proximal understanding of wellness. In contrast, the majority of doctors in both groups do not identify "Poor environmental conditions (e.g., air and water pollution)" as detrimental to their patients' health. The general trend across physician groups points to an understanding of health that proximal and highly behavioral based rather than structural.

Figure 1.

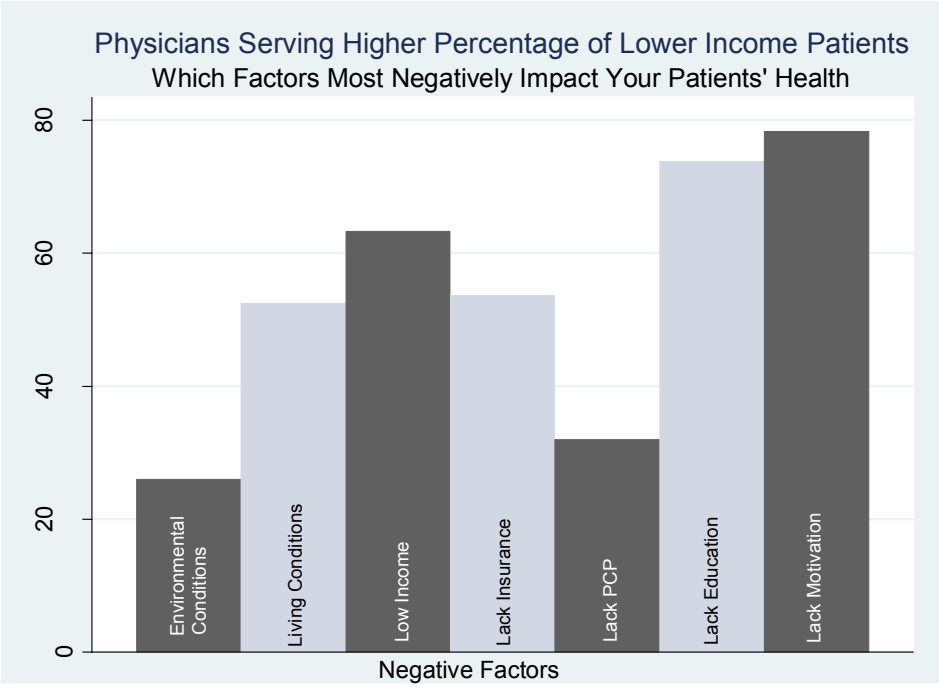
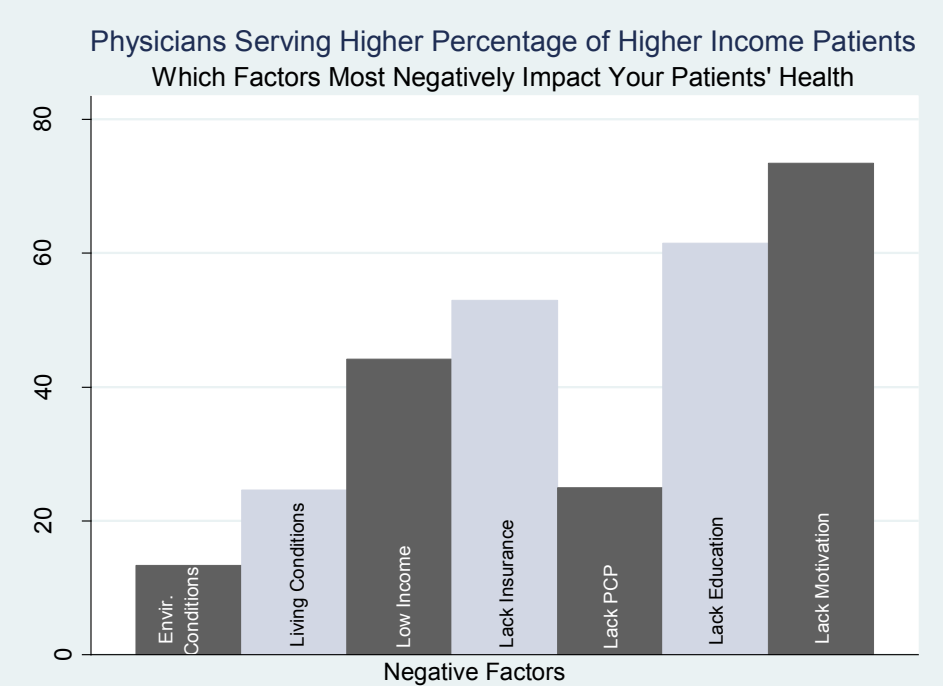


Figure 2.



DISCUSSION

Results of this study demonstrate a discrepancy between the theoretical understanding of social determinants of health and the practical application of these concepts in patient care. Of the 1000 doctors surveyed, 87% agreed that addressing patients' social needs is as important as addressing their medical conditions. However, responses to more specific questions demonstrate that, in practice, physicians ascribe their patients' sickness to more proximal causes, failing to see that structural barriers to health constrain behavior.

The first portion of my analysis focuses on identifying which factors among physicians and their patient pools influence the likelihood of a doctor agreeing that social needs are as important as clinical needs—a measure of structural awareness. Results from an ordered logistic regression, indicate that, on average, female physicians and younger physicians are significantly more likely value social causes as health impacting; in the same vein, physicians serving higher percentages of minority and low income patients are also, on average, significantly more likely to ascribe importance to social determinants of health. These findings, however, do not address the question of directionality—whether the composition of patient pool drives a structural understanding of health or if a structural understanding attracts physicians to serve a more marginalized patient pool.

The question of structural awareness that informs the regression analysis is broad and largely conceptual—it is easy to agree or disagree based on theoretical understandings of health. The fact that the vast majority of physicians agreed that social conditions are as important as clinical conditions, while the U.S. is known for its heavy reliance on "sick care" rather than prevention, highlighted a potential inconsistency

between theory and practice. Given the data of the survey, I decided to analyze the responses to a question that more specifically addresses the health of these physicians' patients, rather than health in general.

The statistical narrative that emerges when physicians identify factors that negatively impact their *own* patients' health is in striking contrast to their seeming structural understanding of health. Though I chose a range of factors to report on, the discrepancy most clearly comes through in responses to "Poor environmental conditions" and "Patients lack of motivation to make health-conscious decisions." Literature confirming the link between environmental conditions and health is vast and comprehensive—environment is one of the foremost social determinants of health, a structural cause that constrains behavior and defines wellness (Wadsworth and Butterworth 2006, Dutton 1986, CDC 2013, Adler and Newman 2002, Manchanda 2013). Yet, only 18% percent of surveyed physicians agreed that environmental conditions negatively impact their patients' health. This trend holds true even when differences in physicians who serve higher percentages of low income and high income populations were compared. Patients' lack of motivation, on the other hand, was the most agreed upon response, with 75% of physicians identifying this behavioral fault as a factor that most negatively impacts their patients' health, a finding that also remained constant across physicians serving higher percentages of low income and high income patients.

Physicians have never had more access to research on the ways in which the pathologies of social systems impact patients' health, yet access to data does not translate into changes in practice (Metzl and Hansen 2013). What does translate into practice is the education doctors are receiving; medical schools are training doctors to listen to

individualized stories, not to structural ones. Cross-cultural competency, which has been part of medical school curriculums for the past several decades, teaches doctors to listen to "cross-cultural" aspects of their patients' narratives; this is not to say that culture is not important, it is necessary to the understanding an individual's life. However, structural determinants ultimately shape the trajectory of patients' health—socioeconomic factors, environment, racial status—overwhelming define our opportunities, access to resources, and ability to lead healthy lives. Culture, like any behavior, ritual or practice inextricably relies on the broader structures that determine our social positioning. Behavior cannot be uncoupled from the social framework in which it exists (Glass and McAtee 2006 and Adler and Newman 2002). Consider this example, which highlights the difference between cultural and structural implications: studies show that low-income African Americans struggle to comply with doctors' orders to take their medications with food, not because they harbor cultural mistrust of the medical establishment, but because they live in food deserts with no access to grocery stores (Metzl and Hansen 2013). Socioeconomic gradients in health outcomes persist after individual risk factors are controlled for (Glass and McAtee 2006). Essentially, even when "life style" factors like smoking, diet, condom use, and exercise are adjusted for, health outcomes still vary by social status; disadvantaged (e.g. minority and low income) populations have higher rates of morbidity and mortality compared to more their more privileged counterparts, even when exhibiting the same "risky" behaviors.

The work and educational commitment that U.S. physicians endure is difficult, admirable and undeniably important. I want to be clear that the aim of this study is not to blame physicians and their methods of practice for health disparities. Medical education

and the healthcare system they graduate into are constraining in terms of time and financial expectations. Both fail to provide adequate resources for maximizing patient health. When doctors are taught to counsel patients on behavioral issues and not make the connection to broader social systems, we cannot blame them for following their training. Nor should we expect physicians to single handedly reform healthcare or take on the social work of their patients' needs. It is estimated that there are currently fewer than 2,000 practicing "upstreamist" physicians in the U.S. today—a very small fraction of the 624,000 working doctors—these providers are the exception; they have sought ways to address structural barriers to health despite the dominant care model (Manchanda 2013).

To increase support for socially responsible medicine, Metzl and Hansen (2013) introduce the concept of structural competency as a framework for medical school curricula that would teach doctors how to recognize the structural forces in their patients' lives. Concrete examples that demonstrate the importance of such competency are vast; think of the obese child who is told to exercise more, without consideration for the danger of their neighborhood; think of a middle aged man with hypertension who is told to eat better without regard for his life in a food desert. Once doctors begin asking the next level of questions—not just "What are your symptoms? What hurts?" but "Where do you live, work, and play?" will structural issues come into focus. The mere identification of structural barriers is not a complete solution, but it allows for more creative partnerships and opportunity to better health sustainably and holistically.

Teamwork in medicine is at the forefront of progress and is key to translating structural competency from perspective into practice. For example, Patient Navigators and Community Health Workers, whose main job is to advocate for patients on a myriad

of social fronts (providing support with housing issues, social services, child care, mental health referrals, etc.) are demonstrating success in clinical settings. Current research suggests that patient navigation is associated with improved rates of screening and follow-up, lower clinical stage of presentation, and higher patient satisfaction; furthermore, navigation services allow healthcare facilities to better engage, track and support patients, especially disadvantaged clients (Dohan and Schrag 2005). Though health does not begin at the doctor's office, people still get sick and it is necessary to have teams of professionals that can identify the root causes of illness and work systemically to prevent relapse and complications. As millions of the previously uninsured enter the healthcare system, changes in education and practice have to address the social barriers that define the health of these vulnerable populations. "Pay-for-performance" policies will also increase the pressure for doctors to produce better and sustainable health outcomes for their patients, rather than rely on costly interventions. Amidst reform, the medical community has an opportunity to push for a system that advocates for holistic care, better equity and ultimately a healthier nation, which, in the end, is where all paradigms can align.

While this study highlights significant patterns in physicians' understanding of structural forces pertaining to health, other questions persist, which may be addressed with future research. Limitations arise from the quantitative nature of the data and analyses. Though necessary for demonstrating the overarching patterns in physicians' perceptions of health, regressions and response rates do not reveal the complexity of these attitudes or the barriers that physicians themselves encounter in practice. This research stands to be considerably enriched with a qualitative approach, which can give

voice to the statistics I have presented. A comprehensive understanding of what physicians are lacking in their education and in professional support—whether it is billing practices, lack of Patient Navigators, etc.—is necessary for designing changes that can better enable doctors to identify and address the structural barriers to their patients' health. Future research also has the opportunity to address structural awareness among specialists, as they make up the majority of the physician work force; barriers to socially minded care are likely greater for them than for primary care physicians. We tend to think of primary care as most holistic, yet specialty care dominates our healthcare system and, to optimize health, specialists need to recognize and address the structural roots of their patients' conditions.

CONCLUSION

Each physician takes the Hippocratic oath, vowing to dignify human life and health in all contexts; "I will remember that I do not treat a fever chart, a cancerous growth, but a sick human being, whose illness may affect the person's family and economic stability. My responsibility includes these related problems, if I am to care adequately for the sick." They promise to "prevent disease whenever I can, for prevention is preferable to cure" and to "remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm" (NOVA). There is gravity and responsibility to these words; conceptually doctors understand the impact of social factors on their patients' health, but they too are people caught in a system, bound by political and social barriers that prevent them from treating social determinants of health. The data demonstrates gross health inequalities that

pervade American life—regardless of political stance, we cannot agree to another decade of economic expenditure on a healthcare system where non-white babies are dying at twice the rate of white babies, or where black adults are 50% more likely to die of heart disease or stroke than their white counterparts. In light of healthcare reform, physicians, educators, public health experts, and politicians have the opportunity to unite on a vision of health that is more whole, equitable and just for not only the disadvantaged, but for all Americans.

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