INTRODUCTION

With the election of a Democratic majority in both the United States House and Senate, and the newly elected Democratic President in 2008, there has been renewed interest in the implementation of a national health insurance program. Discussions surrounding the healthcare system, structure, and industry have turned into a hot topic of national debate seemingly overnight. The provision of urban and rural healthcare in an efficient, effective, and economical manner is the promoted trident of reform coming from the offices in Washington, as they look for ways to fix the healthcare crisis within the States. Maintained in this effort, the national government has rigorously focused on the particulars of reducing the number of uninsured adults and children. Attempts to create a government-run public option have not maintained a high level of traction since the Clinton administration tried to open the door to a national healthcare program in the 1990’s. Yet, national health insurance has witnessed a revitalization of both public and political support in the last year alone (Sack & Connelly, 2009; Kaiser Family Foundation, 2009). The debates over a national health insurance mandate and a public plan have revolved around various aspects of the current medical system structure, including financial cost, health insurance status, and eligibility standards. Most visible in the national debate, is the role of government in lowering the number of people in the United States without medical insurance. Currently, national uninsurance rates are estimated between 42 and 45 million Americans, nearly 17 to 20 percent of the total population, in the last two years (Kaiser Family Foundation, 2008).

Roughly 20 percent of Mississippians are estimated to be uninsured (Kaiser Family Foundation, 2007). Mississippi—like the nation—also experiences concentrations of physicians of all specialties, including those primary care specialties that are most able to provide preventive care to patients, in areas that tend to be more heavily populated, such as the Mississippi Gulf Coast, Jackson, and the Memphis (Tennessee) suburbs. Insured individuals who maintain continuous medical coverage are able to have a regular source of care more easily than those individuals who experience gaps in coverage or continuous lack of medical insurance. Additionally, Mississippi’s population faces mortality rates that are significantly higher than the national average, with national rankings of first in cardiovascular disease, fifth in cancer, and ninth in cerebrovascular disease deaths (Center for Disease Control and Prevention, 2009)---each of which is somewhat preventable through lifestyle changes and preventive measures. With continuous medical insurance coverage, access to medical care will become more frequent, thereby decreasing the rates of the three most common causes of death.
The ability to maintain access to necessary medical services is often correlated with the personal and/or familial economic costs associated with using, or refusing, medical care (Johnson & Crystal, 2000). To make health care costs less of an issue for American households, federal legislation similar to the 2007 state-wide health insurance mandate, the Massachusetts Health Care Program, is being proposed (Blumberg & Holahan, 2009). By implementing a healthcare program that created a public plan, increasing welfare eligibility standards, and serving as a “broker” for small businesses and individuals to affordable health insurance, the Massachusetts healthcare plan reduced their uninsured rates for all income levels and ages (Long, 2008). These uninsured rates in Massachusetts were significantly affected by the implementation of the state-wide insurance plan, witnessing a 48% drop in the unemployment rates for all ages and incomes in the first year alone (Massachusetts Health Connector, 2009).

Given these circumstances, this study serves to project what changes will occur to Mississippi’s medical landscape if there were a significant and sudden increase in the rates of insured adults and children, similar to the Massachusetts experience. With more people seeking medical attention, the obvious need for more medical professionals, such as primary care physicians, would have to rise in order to meet that demand. The availability of primary care physicians, recently cited as “the biggest chokepoint in the health care system” associated with any national healthcare reform will have a direct impact on the accessibility of timely care (University of Wharton, 2009). With the Massachusetts plan still in its infancy, few studies look at the rate of change in medical utilization when going from an uninsured status to enrollment in a medical insurance plan. Studies examining comparable scenarios, such as enrollment in Medicaid and State Children Health Insurance Programs, were used to get an accurate estimate of changes in utilization patterns when insurance status changes. Previous analyses (Long, Marquis, & Rodgers, 1998) (Marquis & Long, 1994-1995) found that people enrolled in a healthcare plan utilize, on average, medical services, such as outpatient care, an additional visit per year for adults and 1.1 additional visits per year for children, than their uninsured counterparts. According to those studies, adults with insurance, who were previously uninsured, visit the doctor at a rate of 3.86 times per year. Children with insurance, who were previously uninsured, visit the doctor 3.49 times per year. We use these estimates in our analyses to estimate projected changes in utilization in Mississippi if a health insurance mandate were implemented.

The Massachusetts health insurance mandate did not produce the immediate eradication of the uninsured status among its population. The Massachusetts uninsurance rate dropped by a little less than half in its first year of implementation. Additionally, the Massachusetts plan provides exemptions to individuals from buying health insurance if health insurance is considered unaffordable based upon family size, household income, and cost of premiums. For this reason, the Mississippi projections assume a 48% reduction in the first year of a health insurance mandate; however, Mississippi and Massachusetts are very different states with very different income profiles, so caution should be exercised in interpreting these projections. If a comparable program were implemented in Mississippi, it is likely that even more residents could opt out based on income and family size; so reductions in Mississippi might not be as substantial as those experienced in Massachusetts. Projections in the subsequent years would likely increase the number of physicians needed, as the unemployment rate would likely continue to drop (Long & Masi, 2009).

To project current demand, statewide utilization rates for 2006 were calculated, using both childhood and adult utilization rates for the insured and uninsured. These rates were multiplied by the population of their respective insurance status. Based upon Mississippi Board of Medical License...
Renewal Data, there were 2,081 primary care physicians in the 2006-2007 license year. Using Small Area Health Insurance estimates from the US Census Bureau and utilization rates from Marquis & Long in 1994 to 1995 and Long, Marquis, & Rodgers in 1998, there were an estimated 10,269,556 physician visits state-wide in 2006. This works out to be 4,934 visits per doctor per year. This estimate may be considered slightly high, as recent physician self-report survey data, through the second Mississippi Physician Workforce Study (MSMD 2007), estimates that physicians have 4,260 visits per year. Therefore, our projections should be considered conservative estimates. Each county’s utilization pattern was estimated using the same method as for the state. The resulting total visit number was divided by 4,934 visits to estimate the number of physicians needed in that county. The number of physicians needed was subtracted from the number the county currently had to show the number the county needed to have adequate levels of care right now—without any change to insurance status. The results are shown in Map 1 (negative numbers indicate that the county has an excess of physicians).

Current Needed Net Change for Primary Physicians by County (Map 1)

Mississippi suffers from a similar condition of misdistribution of primary care physicians from which many rural states suffer, where most professionals choose to work in a few urban centers. This unfortunate situation affects Mississippi counties in an extreme way. As Map 1 shows, of the 82 counties, only eight counties have more than five physicians who could leave the county without resulting access to care shortages. Twenty-eight counties must add more than five physicians, with six of those needing to recruit 15 or more physicians in order to address current shortages in access to care. The counties of Hinds and Forrest have a wealth of physicians, being over current demand by 220 and 65 physicians, respectively. On the other hand, DeSoto, Lamar, and Jackson counties have the largest needs for physicians in the state, experiencing the greatest need for additional primary care physicians in local communities. Some of these shortages might be indicative of state border crossing for health care, as
these counties are adjacent to counties in Alabama, or Tennessee that have an excess of physicians. Since Rankin is adjacent to Hinds county, where the University of Mississippi Medical Center is located, their shortages are likely associated to physician location in Jackson. Current demand expresses the drastic reach of the shortage throughout the state in physicians, before a healthcare insurance mandate would be implemented. The shortage in Mississippi is already at an unsustainable rate, and is currently moderately buffered by the ability of urbanized areas and nearby states offering relatively accessible options in medical care.

Next, we used the changes in utilization rates mentioned previously to estimate the increase in services utilization that would be experienced if a plan similar to the Massachusetts plan was implemented. Each county’s uninsurance rate was decreased by 48% and a new county-wide utilization rate was calculated. The new utilization rate was divided by 4,934 visits per physician per year and the projected number of physicians needed in the county was produced. For mapping purposes, the projected number of physicians needed was subtracted from the number of physicians currently in the county, which is shown on Map 2.

*Projected Needed Net Change for Primary Physicians by County (Map 2)*
and Forrest counties still maintain an abundance of physicians. While these additional physicians required at the county level may seem small, the systematic shortfalls experienced across the state result in the immediate need for many more physicians to practice within Mississippi.

Projected Needed Percent Change for Primary Care Physicians by County (Map 3)

Map 3 shows the number of physicians needed as a percent of physicians who already practice within that county. The drastic need in Mississippi becomes more evident when taking into account that the increases, or decreases, certain counties require is more complex than a straightforward net loss or gain. A simple increase in three to ten physicians, at first glance, looks to be a simple accomplishment for a county to achieve. When analyzing the percentage gain in physicians needed per county in order to achieve patient-to-physician parity in the number of visits occurring, a dramatically different story is told about need. For example, both Clarke and Tallahatchie counties require seven more physicians to achieve parity in visits. But the associated percent increase of 120.7% and 240%, respectively, appears unobtainable. In Tippah County there is a need of 11 physicians to achieve a level of sustainability with a potential new health insurance mandate, translating into a 216% increase of current primary care physicians. Of Mississippi’s 82 counties, 30 would need an increase in physicians by more than 75%. Eleven of those 30 would require more than a 100% and up to a 200% increase and eight more counties would need an increase of more than 200% of their existing physicians. Map 3 highlights that 48 of Mississippi 82 counties (60%) would require a more than a 25% increase in their physician workforce to be able to provide adequate access to care for newly and currently insured patients if a healthcare insurance mandate were to be enacted.
Given the small area of a Mississippi county, as well as patient mobility for care across county and state lines, county micro-region analyses examine each county and its adjacent counties as analytic micro-regions. Our provided micro-region example is Newton County, whose adjacent counties are Leake, Neshoba, Kemper, Scott, Lauderdale, Smith, Jasper, and Clarke (see Map 4). With the implementation of a state-wide health insurance mandate, Newton County is in need of seven additional physicians, or an increase of 64.5%, over the amount of doctors they have at last assessment. Newton County is the selected example from the 82 micro-regions due to the dynamic nature of the impact of the surrounding counties' on Newton’s physician need, whereas particular counties see both extreme excesses and moderate undersupply of physicians. As an individual county, Newton’s demand is for 7 additional physicians, but when examined as a micro-region, the Newton county micro-region is in need of 20 additional physicians. Each county in Maps 4 though 6 is representing its associated micro-region.

Using each county’s 2006 primary care physician population and county physician visit estimates, each county’s physician demand estimate and total number of generalists were calculated. Next, we identified contiguous counties for each of the 82 counties. These adjacent counties’ visit estimates and numbers of primary care physicians were then added to the original county’s visit estimates and number of primary care physicians to come up with a total visit estimate and number of primary care physicians for each county’s micro-region, defined as the county plus its contiguous counties. This recalculation results in an estimate that is more likely to resemble access to care for the specific county’s citizens given general history to travel for care (Cossman, Ritchie, & Cosby, 2006).

The resulting total visit number was divided by 4,934 visits to estimate the number of physicians needed in that county micro-region, as with previous maps. The number of physicians needed was
subtracted from the number the county micro-region currently had to show the number of physicians the county micro-region needed to have adequate levels of care right now—without any change to insurance status or without a health insurance mandate. The results are shown in Map 4 (as with previous maps, negative numbers indicate that the county has an excess of physicians). When a county is acting as the center for medical care services, it places additional burdens on their medical structure, as evidenced by the 38 county micro-regions in this map that would need to recruit more than 15 physicians, at a minimum, to address current shortfalls. In contrast, only 15 county micro-regions would be able to function in a sustainable manner even after losing more than 15 primary care physicians. Overall, Mississippi is currently facing a shortfall of requiring greater than five physicians to locate in 53 separate micro-regions. Within those micro-regions the increase can be astonishing in some cases reaching 52, 59, and 69 for Tunica, Marion, and Scott counties, respectfully.

*Projected Needed Net Change for Primary Care Physicians by Micro-Region (Map 5)*

Regarding the primary care physician shortages at the micro-region level, health care needs mimic the county-level analysis of net gain or loss when assessing the projected needs a healthcare reform program that mandates insurance coverage would incur. The state-wide needs obviously do not change—the state would still need to recruit 52 additional physicians. In comparison to the current needs in primary care physicians, 69% of Mississippi county micro-regions, would experience a projected shortfall of more than five primary care physicians with the implementation of a health care mandate. As in Map 4, most micro-regions that already require more physicians, such as Scott and Lafayette, will require even more physicians than their current needs demand—if a health mandate were to be implemented. Meanwhile the Hinds and Perry county micro-regions still maintain an over-abundance of physicians. The method of micro-region analysis paints a starker picture of what Mississippi regions can expect to
encounter when taking into account the reality of patients border-crossing for medical attention. Physician needs are projected to be more than double the net gain, or loss, associated with individual counties (see Map 2) in particular county micro-regions. The additional physicians required at the micro-region level highlights the deficit experienced in relation to varying regional circumstances across the state as a result.

**Projected Needed Percent Change for Primary Care Physicians by Micro-Region (Map 6)**

Map 6 shows the number of primary care physicians needed as a percent of physicians who already practice within the micro-region. Similar to the previous breakdown in Map 3, a clearer picture emerges on the need in Mississippi for primary care physicians when reviewing that the increases, or decreases, certain micro-regions require is direr than net gain or loss implies. In contrast to the net gain or loss maps analyzing the percentage gain in physicians, perspective is changed in how the problem of having a shortage of primary care physicians can be addressed by micro-region. While the data is not as visually shocking as other maps presented here, a refined analysis still uncovers the depth of this dilemma in physician demand. No micro-region experiences the same leap in percentage points as data on net gain or loss projected for the central counties. However, 28 of the 82 micro-regions in Mississippi would need to experience more than a 25% increase in the primary care physicians in their micro-region. Most of Mississippi, outside of the Hinds County micro-region, would experience a shared burden on the current amount of physicians present in relation to the needs of surrounding counties. This may lead to a balancing in the numbers over a span of six or eight counties and lower percentage numbers for counties in the Gulf Coast and near the Memphis (Tennessee) border. Two particular micro-regions, those of Benton and Marion counties, suffer the greatest need for an increase in physicians at 78% and 93% over their current primary care physician workforce. The lingering
effects of the lack of primary care physicians will have a substantial effect not only on the individual counties themselves, but their neighboring counties will also require increases in their primary care physician workforce to handle any such deficiencies.

LIMITATIONS

There are limitations to the methods we use to discern the relationships between medical utilization, health care coverage, demand for services and access to primary care physicians. While our estimates indicate potential changes in the first year of any potential health care mandate, the long term effects could be much more substantial; therefore, our estimates are conservative. Additionally, this analysis assumes no population growth from 2006 to 2007 in the state of Mississippi.

IMPLICATIONS

Healthcare costs continue to rise and health behaviors (e.g., obesity, smoking and alcohol consumption) are the precursors to the top health killers in America. Many believe that healthcare reform could be the magic bullet to “cure” rising costs and improve access to preventive care. However, healthcare reform will unquestionably affect more than just the welfare of the patients for whom it seeks to ensure and provide access to health care. If the goal of comprehensive healthcare reform is to increase the level of access to medical care each citizen maintains, then the demand of such care must be seriously considered in any reform effort. This policy paper shows a daunting number of additional physicians required across Mississippi counties. This could become a political and economic decision of contention associated with any health care mandate—whether it is federal or state. Addressing such medical imbalances across the state could serve to provide immediate improvements in access to care, and open new doors to combating the problems of chronic diseases plaguing the population.

Obviously, a health insurance mandate would increase demand for health care access. Insuring all Mississippians would likely reduce fiscal rationing of health care, but with the associated issues with access to physicians might result in increases in spatial rationing of care. That is, even those residents who would become insured, they might not be able to see a physician due to health care delivery constraints. There are two solutions to the potential strain that the health care system might implement in response to a mandate: to increase access or to reduce demand. Reducing demand will require more attention to be paid to preventive care; so any health insurance mandate would best be served by focusing on prevention as well as treatment. There are few short-term means to improve access. There are some telemedicine programs that help rural primary care physicians treat patients they would normally refer to outside physicians and these programs may be able to expand. Nurse practitioners have been seeing more patients, but do not provide a panacea to rural access in Mississippi—state policies require that nurse practitioners be supervised by physicians (who would be overwhelmed with patient care under the circumstances we are describing). Recruiting physicians will also not be a viable option, especially if a health insurance mandate is nationwide—many areas across the country will all be searching for physicians to work in their areas.

The number of physicians in the state speaks to only half of the story of the impact of a health insurance mandate in the state. Any new large-scale public healthcare plan will place structural demands on each Mississippi county and their associated micro-regions. These demands on
healthcare access will especially affect those areas’ ability to cope with the substantial associated increases in newly enrolled insured patients. Future research should determine the realistic costs and benefits to the Mississippi taxpayers of such a healthcare plan. As of this writing, the current political environment indicates that national policies are preferred over state-level policies. Nevertheless, the research presented in this paper, pertinent to discussions revolving around the immediate changes to healthcare policy, aimed to address potential change from Washington DC or Jackson Mississippi and provide equal representation of their consequences to Mississippi residents.

REFERENCES


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