

# **Working Paper**

## **The Compensation of Highly Paid Professionals: How Much Is Rent?**

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## Executive Summary

Highly educated professionals in the United States, such as doctors and lawyers, earn salaries that are considerably higher than their counterparts in other wealthy countries. In many cases the ratios of pay in the United States to that of other wealthy countries exceeds two to one. These gaps are not explained by differences in per capita income, which are not nearly as large, or pay scales more generally. In many occupations U.S. workers get lower pay than their counterparts in other wealthy countries.

This paper examines the evidence that the pay gap is due to protectionist measures that restrict competition. The most important of these protectionist measures are licensing practices that both unnecessarily restrict domestic competition and also prevent foreign-trained professionals from practicing their profession in the United States. There is a considerable amount of money at stake in excess pay for U.S. professionals. Higher pay for doctors alone costs close to \$100 billion annually (more than 0.5 percent of GDP). Adding in the excess pay for other professionals could double this amount.

The first part of the paper reviews existing literature. It notes evidence that state regulations limiting the practice of dental hygienists and nurse practitioners both lower the pay of these professionals and raises the salaries of dentists and doctors, respectively. These restrictions do not have obvious benefits in terms of the quality of service to patients.

The second part uses data from the American Community Survey (ACS) to examine the impact of various restrictions on the practice of these lower paid professionals on their own pay and the pay of doctors and dentists. It finds some evidence that the restrictions have reduced the pay of dental hygienists and nurse practitioners, but little evidence of any impact on the pay of dentists and doctors. It also tests whether state bar rates have an impact on the salary of lawyers in the state. Here also the tests are inconclusive. Lower pass rates do appear to be associated with higher pay for lawyers, although the relationship is not significant when state per capita income is included in the regression.

The paper then explores different mechanisms for increasing international competition in these professions. Currently foreign trained doctors are largely excluded from practicing medicine in the United States. In most cases they are required to complete a U.S. residency program. The paper notes that if the number of foreign trained physicians allowed to practice in the country was doubled (removing the U.S.-residency requirement), it would lead to an increase of in the number of physicians of 130,000, or 15.1 percent, by the end of a decade.

A second potential source of competition would be through medical travel. In many cases, the cost of major medical procedures at high quality facilities in other countries is less than one-fifth the cost in the United States and sometimes as low as one-tenth. With some of these procedures costing close to \$100,000 or more, the potential savings are considerable. Since many of these procedures are done on a non-emergency basis, it would often be practical for patients and their families to travel to other countries for the procedure. If the savings were shared by insurers with patients, it is likely that many would choose this option.

If it between 10 and 30 percent of potentially outsourceable procedures were performed in other countries, it would lead to savings of between \$10 and \$30 billion based on 2014 demand and prices. If one-third of this involved doctors' fees the reduction would be between \$3 billion and \$10 billion.

The third potential route for increased international competition is through the emigration of retirees. If Medicare allowed retirees to buy into lower cost health care systems in other countries, and to share in the savings, it is likely that many would take advantage of this option. The potential savings are substantial. In some cases the projected per person savings by 2035 would be over \$10,000 a year (in 2013 dollars) by 2035, or more than \$20,000 for a couple. If these savings were split between the government and the beneficiary it is likely that many more beneficiaries would opt to spend their retirement in other countries. If 10 percent of retirees (compared to 1.5 percent in 2013) took advantage of this option, it would reduce health care spending, and presumably the demand for doctors, by 4.7 percent.

The potential for reduced demand for physicians as a result of eliminating excessive licensing restrictions and increased foreign competition can largely eliminate the gap in pay between physicians in the United States and other wealthy countries, saving close to \$100 billion annually.

Currently, dentists are prohibited from practicing in the United States unless they graduate from an accredited dental school in the United States and, since 2011, Canada. If this restriction were removed so that dentists with comparable training from other countries could also practice in the United States, and unnecessary licensing barriers were removed, it could bring the pay of dentists in line with their counterparts in other wealthy countries.

In total, the potential gain from eliminating barriers to competition for highly paid professionals in the United States is likely in the neighborhood of \$200 billion a year, or more than 1.0 percent of GDP. This is a substantial cost to the rest of the country that increases the income of those at the top of the pay ladder.

## Introduction

The most highly educated professionals in the United States, most notably doctors, enjoy far higher pay than their counterparts in other wealthy countries. The vast majority of full-time workers in the highly paid professions have earnings that put them in the top three to four percent of workers, with many being in the top one to two percent. The higher pay for these professionals in the United States both increases inequality and raises the price of their service to consumers. If higher pay corresponds to better quality there would be no economic loss associated with it. In that case, the quality adjusted price in the United States would be comparable to the price in other countries. However, insofar as the price is not associated with better quality, its impact is comparable to a tax. In that case, the higher wages received by professionals in the United States compared to their counterparts in other countries is not just a source of inequality, but it is a drag on growth and drain on the economy. Measures aimed at reducing the pay of professionals would both boost growth and lessen inequality.

This paper examines the extent to which the compensation of workers in highly paid professions in the United States can be viewed as rent, meaning that it would be possible to get comparable quality in these services at a lower cost. The first part briefly outlines the dimensions of the problem, comparing pay in these professions in the United States with pay in other countries and calculating the implicit savings if the gaps were reduced or eliminated. The second section reviews evidence of rents in the three largest high-paying professions: doctors, lawyers, and dentists due to professional restrictions. The third section presents results from additional analysis of the impact of these restrictions. The fourth section considers the possible impact of increased international competition in these professions. The fifth section builds off this work to calculate the impact that eliminating rents in these professions could have on wage differentials in the economy as a whole. The final section summarizes the analysis and discusses the extent rents in these professions are a major course of inequality and also have impeded growth in the last four decades.

## The Compensation of Highly Paid Professionals in the United States

The first issue to examine is the extent to which there are differences in pay between the highly paid professionals in the United States and other wealthy countries. This is not quite as straightforward a question as it may appear due to the fact that many of these professionals have their own practices, especially in the United States. As a result, many standard measures of labor income are inadequate

since much of the income of these professionals, especially the higher paid ones, will show up as income from owning a practice rather than payments for their services.<sup>1</sup> Nonetheless, we do have a variety of surveys, many from professional organizations, which seek to get around this problem. While the data may not be as accurate for high-paying professions as for other occupations, we can get a reasonably good idea of their salaries based on the data that is available.

## Physicians

Physicians are a good place to start, since they are the highest paid of these professions and also there is a large number of practicing physicians in the United States. According to a recent analysis comparing physicians' pay in the United States with that of other wealthy countries, there is a large gap which explains a substantial portion of the difference in per person health care costs (Laugesen and Glied 2008). This analysis finds large differences in pay for both general practitioners and orthopedic surgeons (the only area of specialization examined) between the United States and the other wealthy countries included in its reference group (Australia, Canada, France, Germany, and the United Kingdom). Average pre-tax earnings in the United States for primary care physicians was \$186,600 compared to an (unweighted) average of \$121,200 for the other five countries (in 2008 dollars). The average pre-tax earnings for orthopedic surgeons in the United States was \$442,500, compared to an average of \$215,500 in the reference countries.

An analysis by the OECD (Fujisawa and Lafortune 2008) put the average compensation for general practitioners in the United States in 2004 at \$146,000. This is more than 40 percent higher than the average for the other countries in the analysis, even excluding the Czech Republic as an outlier on the low side. This analysis found an even larger gap between the pay of specialists in the United States and most other OECD countries. (It found specialists were paid even more in the Netherlands.) The average pay for specialists in the United States was \$236,000 in 2003 (in 2003 dollars). By comparison, it was \$159,000 in Canada, \$153,000 in the United Kingdom, \$144,000 in France, and just \$93,000 in Denmark. The levels and gaps would be almost 30 percent higher in 2016 dollars.

A slightly more recent analysis suggests that doctors' pay in the United States is somewhat higher than indicated by these earlier studies. A 2012 survey by the Association of American Medical Colleges, American Medical Group Association, cited in the Washington Post, put the *median* pay for family medicine at \$208,900 (Washington Post 2012). The median for general surgeons was \$367,300, for anesthesiologists \$372,800, and for cardiologists, \$422,900. These figures are striking,

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<sup>1</sup> The structure of the income tax, which taxes capital income at a lower rate than labor income, gives professionals who own their own practice an incentive to have labor income appear as capital income.

because the median is almost certainly well below the average for all types of doctors since there is much more room on the upside than the downside from these figures.

There are two other points worth making about doctors' compensation in the United States. First, the mix of doctors in the United States is much more skewed to specialists than in other wealthy countries. In most other wealthy countries close to two-thirds of physicians are general practitioners, with one-third specialists. In the United States the mix goes in the opposite direction. This implies that we pay more for physicians both because we pay more for each type of physician than in other wealthy countries, but also because we have a much larger share of expensive specialists and relatively fewer primary care physicians. An analysis by the Commonwealth Fund (2006) found that, on a purchasing power parity basis the United States spends almost three times as much per capita for physicians as the median for other wealthy countries.

The implication of this difference in composition is that primary care physicians in other countries perform many of the diagnoses and procedures that are reserved for specialists in the United States. If this difference is not associated with improvements in outcomes, then it would suggest that the increased use of specialists in the United States is due to rent-seeking by specialists. In that case we would be seeing a situation where specialists set medical standards that they are able to impose on the sector as a whole, which leads to more demand for their area of specialization. It would be predicted that workers in a sector securing rents would engage in this sort of behavior.

It is beyond the scope of this paper to determine the extent to which the greater use of specialists in the United States results in better quality care, although there is certainly evidence for questioning whether this is the case (e.g. Sharp et al. 2002).<sup>2</sup> However, the excessive use of specialists is certainly consistent with the presence of rents for specialists. It is also worth noting, that if specialists in the United States are spending much of their time doing tasks routinely performed by less highly trained general practitioners in other countries, then the gap in pay is effectively even larger than the raw data indicate. We are paying specialist wages in the United States for general practitioner work.

On the other side, the implication is that general practitioners in other countries would be expected to have a higher level of skills than in the United States. If they are capable of performing tasks that would be assigned to specialists in the United States, general practitioners would need to have a larger scope of knowledge than their counterparts in the United States. This would mean that the

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2 The evidence for the impact of specialists on outcomes is mixed. A study reviewing published work on the benefits of specialists found that in 13 papers with 33 clear findings, 16 showed positive benefits from the use of specialists, 14 showed no effect, and three showed negative impacts.

effective gap in pay is also larger since general practitioners have more responsibilities in other countries.

The other point to be made about the data on doctors is that the United States ranks relatively low in overall density of physicians. According to the most recent data from the OECD, the United States has 2.6 physicians per 1,000 people (OECD 2014). By comparison, the density in the U.K. is 2.8, France 3.3, and in 4.0 in Germany. The relatively low density in the United States is a matter of deliberate policy. In 1997, the Accreditation Council on Graduate Medical Education decided to limit medical school enrollments in the United States, which had been growing more or less in step with population growth (Cooper 2008). More importantly, there was a cap placed on the number of residency slots that Medicare would support. This is a more binding constraint since a reduced number of medical school graduates in the United States can be offset by an increased inflow of medical school graduates from other countries. However, since having a U.S. residency is virtually a requirement for practicing medicine in the United States, the cap on residency positions effectively limited the number of practicing physicians in the country. According to Cooper, the United States is the only country that requires practicing physicians to complete a residency within the country.

The result of these policies has been to limit the increase in physician density even as demand was growing both due to growing incomes and also the aging of the population. The United States was an outlier in this respect as shown in **Figure 1**. This deliberate constriction of supply is consistent with a scenario of rising rents, as many people, both domestically and internationally, who had the ability and desire to work as doctors in the United States, were denied the opportunity.

The limitation of the number of U.S. medical school positions and the number of residency positions, together with the requirement of a U.S. residency for licensure, are quite explicit efforts to limit the supply of doctors. However, the demand for physicians' services can also be sustained in part by limiting the extent to which less highly paid medical professionals, such as nurse practitioners or nurse midwives, are allowed to engage in tasks such as prescribing medicine or delivering babies without supervision. While there can be legitimate safety concerns associated with restrictions on the scope of practice of less highly trained professionals, the economic implications of such restrictions are straightforward. If there is a larger scope of practice for these lower-paid professionals, there will be less demand for the service of physicians. The predicted impact of restricting the scope of practice of these professionals would be higher demand and pay for doctors and higher health care costs for patients.

## **Dentists**

The compensation of dentists in the United States, like the pay of doctors, is out of line with the pay of their counterparts in other wealthy countries. A recent survey showed the average pay of dentists in the United States to be almost 40 percent higher than the next highest country (Japan) and more than twice as high as their pay in the U.K. or Finland (2015) as shown in **Figure 2** (World Salaries 2016).

The data shown in Figure 2 almost certainly is a gross understatement in the disparity between the pay of dentists in the United States and their pay in other wealthy countries. The data is drawn from a survey of dentists who are employees. Most dentists in the United States have their own practices, and this group on average has considerably higher pay than dentists who are employees. **Table 1** shows the average and median pay of dentists as reported in a recent survey conducted by the American Dental Association (2015).

According to the survey, the average pay in 2014, net of expenses, for all general practitioners who owned their own practice was \$183,300. For all general practitioners, it was \$174,800. As is the case with physicians, specialists earn much higher pay than general practitioners. The average pay for specialists who owned their own practice was \$344,700, compared with \$322,200 for all specialists. The average pay for all dentists was \$201,900, with a median of \$170,000. This median places the bulk of dentists in the top two percent of workers, with many being in the top one percent.

There are also substantial differences in pay by specialty. At the top are oral surgeons with an average annual pay in 2014 of \$413,400 and a median of \$348,000. The least highly paid specialty is Prosthodontists, with an average pay of \$221,000 and a median of \$170,000. These data are shown in **Table 2**.

As is the case with doctors, dentists benefit from licensing restrictions that protect them from both international and domestic competition. Here also, the licensing rules are set primarily by members of the profession. In terms of international competition, current law requires that dentists graduate from an accredited dental school in the United States. There is an exception for Canada, but no other countries have dental schools that are accredited in the United States. Dentists also protect themselves from domestic competition by limiting the scope of practice of dental hygienists, who often have the skills needed to perform many of the tasks also done by dentists. As with restrictions on the scope of practice of nurse practitioners, nurse anesthetologists, and nurse midwives, there can be real public health concerns behind these restrictions, but their economic impact is unambiguous. They increase the demand for the services of dentists and presumably raise the pay of dentists.

## Lawyers

The legal profession also uses formal licensing requirements to restrict entry, most obviously by requiring lawyers to pass a state bar examination. Lawyers also use state governments to reserve for themselves many tasks that could in principle be done by workers with less legal training, such as paralegals, or often directly by the client. While there is some legitimate basis for barriers to foreign lawyers practicing their profession in the United States (we don't expect all countries to have the same criminal or civil codes and penalties as the United States), there is room for standardization in ways that would allow for more foreign lawyers or legal workers to do U.S.-based legal work. (This work could be outsourced through the Internet, so there is no need for foreign legal workers to physically enter the United States for most types of legal work.)

The United States appears to have a less open legal market than most other wealthy countries. There are not good measures of the openness of the legal profession across countries that include the United States, but a recent analysis by the OECD noted that in 2000, the United Kingdom issued 881 work permits to lawyers from the United States alone. By contrast, the United States issued a *total* of 775 work permits for lawyers in the same year (Hook 2007). The United States can certainly be more open to both more foreign lawyers working in the United States and more legal work being done overseas.

Consistent with the idea of law being a protected profession, a recent analysis found that the pay of lawyers rose substantially more rapidly from 1990 to 2000 than the pay of PhDs in engineering and the sciences, who were more exposed to international competition. While the pay of lawyers rose by 49.2 percent over this decade, the pay of engineers rose by 41.0 percent, while the pay of PhDs in the life sciences and natural sciences rose by 37.5 percent and 29.7 percent, respectively (Freeman 2006). Another study found that after controlling for education, experience, and other standard variables, lawyers enjoyed a pay premium that averaged 49.0 percent (Winston et al. 2011).

Apart from legal barriers that prevent non-lawyers from engaging in many types of legal work, lawyers can also increase the demand for their profession by ensuring that many tasks are more complicated than necessary in order to force people to hire more lawyers. For example, the documents associated with closing on a mortgage are now largely standardized. It should be possible in most cases to structure these documents so that it would not be necessary to have lawyers review them and be present at closing. Many states now have standardized forms for wills, which allow people to download them off the Internet. People without extensive assets or complicated family

situations can typically fill out these forms without the assistance of a lawyer.<sup>3</sup>

There are also areas of rent-seeking that require the services of lawyers, and typically offer very high pay. For example, intellectual property law requires the work of lawyers with narrow areas of specialization. Since there is often large sums involved in legal suits in this area, lawyers doing intellectual property law tend to be well-paid. The National Association for Law Placement found that both starting pay was higher at law firms that did intellectual property law and that the median pay among senior associates was \$65,000-\$75,000 higher at firms with lawyers doing intellectual property law than the average for all law firms (NALP 2015). The other area of rent-seeking that often requires considerable legal work is corporate and individual tax avoidance. Many corporations have devoted enormous resources to finding ways to minimize their tax bill (Kocieniewski 2011). Here also the compensation can be substantial, since an effective loophole that passes legal muster can be enormously valuable.

The United States has considerably more lawyers per capita than other wealthy countries. A recent study found that the United States had 3.65 lawyers per thousand people, compared to 2.2 per thousand in Canada, and just 1.3 per thousand in Germany (Magee et al. 1989). While the relatively large number of lawyers in the United States is a drain on the economy, it is important to recognize that differences between the United States and other countries can imply a need for a larger number of lawyers. Specifically, the rate of incarceration in the United States is far higher than in other wealthy countries. This creates an enormous need for lawyers both for prosecution and criminal defense. In addition, the fact that the United States both does not provide universal health care insurance and has extraordinarily high health care costs means that many people would have an incentive to pursue legal actions over physical injuries that would not exist in other countries.

Finally, regulation and litigation are alternative forms of protection. In countries with more extensive regulation for consumer protection and safety there may be less need for legal action. These qualifications are important, since it is important to recognize the factors that may lead the United States to devote a larger share of its resources to its legal system than other countries. However, even if these factors may lead to more need for lawyers, it does not necessarily follow that they should get higher pay than in other countries.<sup>4</sup>

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3 Individual income tax filings is another area that provides a considerable amount of often unnecessary work for lawyers. It should be possible to arrange for the returns of most low and moderate income workers to be calculated by the I.R.S., with the completed forms sent back to the taxpayer for their approval. This is the current practice in several European countries. If the U.S. adopted this approach it would radically reduce the need for tax consultants and also for lawyers when the calculations done by these consultants are challenged.

4 There is evidence that a larger number of lawyers per capita is associated with slower economic growth. Magee et al. (1989) found that more students of law (a proxy for lawyers) was associated with slower growth.

It is worth noting that in recent years there has been somewhat of a glut in lawyers, with many new law school grads having difficulty finding jobs in the profession and others getting salaries that are insufficient to allow repayment on the loans they have incurred. At the same time, the top law firms are still offering students just out of law school salaries that are well over \$100,000 a year. This suggests that the rents in the legal profession may be getting distributed to a more narrow group of lawyers, but for this group they may still be quite substantial.

## Cumulative Pay and Rents

The above discussion presents an outline of the case that rents are being earned by physicians, dentists, and lawyers. Before examining the evidence in each of these areas more closely, it is worth doing a rough calculation of the amount of money that is potentially at stake. **Table 3** calculates the potential savings to people in the United States if the pay of doctors, dentists, and lawyers were comparable to the levels paid in other wealthy countries (Column 4), or perhaps more realistically, if policy changes were able to cut the gap in half (Column 5).

The biggest area for savings is in physicians' pay where these calculations imply potential savings of \$80 billion a year if the gap were fully eliminated and \$40 billion if the gap were cut in half. While the numbers used in the table for average salaries in the United States and comparable countries are somewhat imprecise given the limits of the data and differences across sources, they are consistent with other findings. For example, the Commonwealth Fund (2006) calculated that the United States spent \$1,362 per capita in 2004 on physicians' services. This compared to an OECD median of \$482 and just \$319 per capita for Canada and \$307 per capita for Germany. This would imply a gap of \$270 billion between physicians' payments in the United States and the median for the OECD and a gap of more than \$320 billion between payments in the United States and payments in Canada and Germany. While the payments in the Commonwealth Fund analysis include more than just doctors' pay, their numbers are consistent with the sort of gap shown in Table 3.

The average pay for dentists in the table is taken from the survey conducted by the American Dental Association, the results of which were shown in Table 1.<sup>5</sup> The calculation of the pay in other countries is an extrapolation from the World Salaries Survey shown in Figure 2. The calculations show a saving of \$21.2 billion if the gap in pay was completely eliminated and \$10.6 billion if the gap were cut in half.

Arguably, the comparisons with other countries should be adjusted for differences in per capita income. Since per capita income in the United States is roughly 20 percent higher in average than in

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5 The number of dentists is taken from BLS (2014).

other wealthy countries, it might be reasonable to expect professionals in the United States to earn 20 percent more than professionals in other countries. However an adjustment of this size would still leave a large gap between the pay of doctors and dentists in the United States and their pay in other wealthy countries.

The average pay for lawyers in the United States is taken from Winston et al. (2011, p. 27). The figure in that table (\$191,000) was for 2000 so it was adjusted upward by the CPI for 2014. This is an average for lawyers in law firms, so it is likely higher than the average for all lawyers. On the other hand, it is likely missing the earnings of many of the most highly paid lawyers who are senior partners in law firms and may report earnings as capital income from their ownership interest rather than salary. For this reason, it is not clear that the number is necessarily too high. The number of licensed lawyers is taken from the American Bar Association (2013). Since the data on international comparisons is limited, the number calculated for the “savings with no gap” column is based on the 49.0 percent wage premium calculated by Winston et al. If this premium was completely eliminated it would imply savings of \$108.4 billion. If half of the premium were eliminated the savings would be \$54.4 billion.

The bottom line shows the total potential savings if rents were eliminated or reduced in these three professionals. In the strong case in which all the excess earnings in these professions was eliminated the annual savings would be \$209.6 billion (about 1.2 percent of GDP). In the case in which half of the excess earnings was eliminated the annual savings would be \$104.8 billion (about 0.6 percent of GDP).

These calculations indicate there would be large potential savings to consumers and benefits to the economy if the pay of these professionals can be brought closer in line with their counterparts elsewhere in the world without a deterioration in the quality of the services provided. The next section reviews some of the research on professional licensing to examine the evidence that unnecessarily strict requirements have raised the pay in these professions. It also presents some original analysis that explores this question in a slightly different way. The following section explores the possibility of increased openings to foreign professionals.

## **Licensing and Rents in Highly Paid Professions**

There has been a considerable body of research in recent years looking at the role of licensing requirements in raising the wages and limiting supply of the affected occupations. While most of the

work has focused on licensing in middle or lower paying occupations, there is some research that examines the impact of licensing requirements on high paying occupations. This work provides some evidence that excessive licensing requirements (meaning beyond what is necessary to ensure quality) reduce supply and raise pay for these occupations.

Kleiner and Kudrle (2000) found that states with lower pass rates for their dentistry licensing exams over the period from 1980 to 2000 had fewer dentists and high prices than states with much higher pass rates. Using a unique data set involving dental exams for incoming army recruits which identifies their state of origin, the study found no evidence of differences in outcomes based on the pass rates.

Kleiner and Park (2010) examines whether regulations allowing for more independence for dental hygienists affected their pay and the pay and demand for dentists. The study using the American Community Survey to compares wages and hours of dentists and dental hygienists. It tests whether differences on a state's score of regulatory flexibility for dental hygienists (the Dental Hygienists Practice Index or DHPI) affected demand and pay for the two professions. The study found no impact of the index itself, however it separately analyzed the impact of giving dental hygienists the freedom to practice without supervision. This analysis found that giving hygienists the opportunity to be self-employed increased their pay by 10 percent, while decreasing the pay of dentists by 16 percent.

Kleiner et al. (2014) found that restrictions on the ability of nurse practitioners to prescribe medicine led to an increase in the cost of a well-child exam, lower hours for nurse practitioners and increased hours for doctors. The study used eight years of data from the American Community Survey (ACS), compared the hours of nurse practitioners and doctors in states with more and less restrictive prescribing rules. It found that limits on prescribing reduced the wages of nurse practitioner by about 14 percent and increase physician wages by about seven percent. The paper also found that restrictive prescribing regulations reduced nurse practitioners' annual hours by six to 14 percent, while increasing physician hours by six to nine percent. It also found that tighter restrictions increased the price of a well-child medical exam by three to 16 percent. In looking for evidence of a deterioration in quality, the study found that weaker restrictions were not associated with either an increase in infant mortality rates or higher malpractice premiums.

In contrast, Stange (2013) found no evidence that the supply of nurse practitioners and physicians' assistants affected the demand for physicians, prices, and total health care expenditures. This study uses county level data from Medical Expenditure Panel Survey to get a variety of outcome measures at the county level over the years from 1996 to 2008. The author constructed an index that

measured the number of nurse practitioners and physicians assistants within each county using licensing data from the relevant state agencies.

The analysis tested for the impact of an increase in the density of NPs and PAs on the number of doctors' visits, total medical expenditures and other outcomes over this twelve year time period. It also tested whether restrictions on the ability of NPs to prescribe drugs affected outcomes. In virtually every specification, the analysis found no significant impact of the density of NPs or PAs on utilization or spending.

While this result does seem very much at odds with the findings in Kleiner et al. (2014), one possibility is that counties are not a useful level of analysis. Since patients may often cross county lines for medical care, the density of NPs or PAs in their own county may not be a useful measure of a patient's use of their services. The issue of patients crossing county lines for health care services may not fully explain the difference in results, but it is one problem that is not obviously addressed in the study.

A study that looked at the origins of professional licensing, focusing on the medical profession, found evidence that more stringent licensing reduced the supply of physicians, especially when it was associated with an increase in education requirements (Law and Kim 2004). This study found no evidence that tighter licensing requirements were associated with higher physicians' pay, although they did find evidence of improved quality in the form of reduced mortality associated with several conditions, although there was no overall difference in mortality based on licensing. The finding that more stringent licensing appears to have been associated with at least some improvement in outcomes is consistent with the standard justification for licensing: that it is necessary in situations where asymmetric information make it difficult for the customer or patient to know the quality of the service being provided. Of course this evidence from the early years of the 20<sup>th</sup> century probably does not give much insight into the relationship between physicians' licensing, quality and pay in the second decade of the 21<sup>st</sup> century. (It's not surprising that the study did not find stronger quality effects given the limitations of the data.)

While not directly examining the impact of licensing, Hall et al. (2011) find evidence that highly skilled immigrants often work at jobs with far lower educational requirements. Using ACS data for the years 2006–2008, the study found that 11.3 percent of highly skilled immigrants were working at jobs with educational requirements that were far lower than what they had attained. The comparable figure for native born workers was just 6.1 percent. They note that having been educated in the United States has a large effect on employment, so that the gap would surely be considerably higher if the analysis was restricted to immigrants who earned their degrees outside the country.

This finding is consistent with the possibility that many potentially qualified immigrants are being prevented from working in high-paying professions by licensing requirements. Of course these workers presumably came to the United States knowing that they would unlikely to be able to work in the profession for which they were trained. Undoubtedly many more highly educated immigrants would come to the United States if they had the opportunity to work in their profession.

A study that looked directly at the earnings of immigrant physicians depending on their ability to get licensed, found enormous differences (Kugler and Sauer 2005). The study looked at two different categories of Russian immigrants to Israel who had been practicing medicine in the Soviet Union. One group was able to get a license to practice medicine almost immediately on a probationary basis, whereas the other group was required to go through a training period and then take a test to be able to receive a license. The study found enormous differences in earnings between those who did and did not get licensed to practice, even after controlling for a wide range of individual characteristics. The gap in pay, depending on receiving the license, was well over 100 percent. This implies very large gains in earnings associated with practicing as a doctor as opposed to available alternatives.<sup>6</sup>

To sum up this limited survey of the literature, there is clear evidence that licensing of highly paid professionals has the effect of increasing their pay, just as is the case with licensing in occupations with lower educational requirements.<sup>7</sup> This research also suggests that weaker licensing requirements in these professions are not associated with any obvious deterioration in the quality of the service, implying that the standards now in place are serving more as protectionist barriers rather than providing assurances of quality to the public.

One of the items that is striking in the research relating the flexibility of practice rules for nurse practitioners and dental hygienists to the pay of doctors and dentists, respectively, is the size of the estimate of the impact. Kleiner et al. (2014) found that restrictions on the ability of nurse practitioners to prescribe drugs lowered their pay by 14 percent, while raising physicians' pay by seven percent. Kleiner and Park (2010) found that allowing dental hygienists to practice independently raised their pay by 10 percent while lowering the pay of dentists by 16 percent. The first study also found that restrictions on nurse practitioners prescribing abilities were associated with a six to nine percent increase in doctors' hours and a six to 14 percent reduction in the hours of

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6 It is important to qualify the meaning of this finding. It indicates that once a worker has trained as a doctor, they would be subject to a large drop in pay if they were forced to work in a different occupation. This does not necessarily mean that workers in the future would train to be doctors for much lower pay than physicians now receive.

7 Not all the research finds that licensing leads to pay premium. Some research has found that a relatively small premium for licensing, which went away altogether in some specifications (e.g. Gittleman and Kleiner 2013).

nurse practitioners. The second study found that greater freedom for dental hygienists translated into slower growth in the number of dentists, translating into roughly a 10 percent difference in supply after a decade.

These figures are striking because there are only roughly a quarter as many nurse practitioners as doctors. Furthermore, insofar as nurse practitioners substitute for doctors, they would be substituting for general practitioners, who are much lower paid than specialists. If this were simply a case of substituting the time of nurse practitioners for the time of doctors who are general practitioners, there is no possible way to explain the size of the estimates for impact on doctors' hours and pay. In effect, the study's results imply that for every hour reduction in the time of a nurse practitioner due to tighter regulation on their prescribing, there is an increase of between 1.7 and 6.0 hours of doctors' time. This is clearly not plausible as a matter of simple substitution nor is the impact on pay.

A more plausible story, which is suggested in the study, is that nurse practitioners are less likely to recommend follow-up procedures or exams with more highly paid specialists. This suggests an obvious area for future research, since the implication is that allowing a large scope of practice for nurse practitioners not only directly lowers costs by substituting less highly paid workers for more highly paid workers, but it may also reduce the number of unnecessary exams and procedures requiring specialists.<sup>8</sup>

The findings on the relationship between the pay and hour of dentists and dental hygienists suggest a similar pattern. While the implied substitution of labor between the two professions is more plausible, given the much closer relationship between the size of the two occupations, the implied impact of the pay of dental hygienists on the pay of dentists cannot be explained simply by substitution. With the average pay of dental hygienists roughly one-third the pay of dentists, the estimates imply that a one dollar increase in the pay of dental hygienist is associated with roughly a three dollar decrease in the pay of dentists. Here also, a more plausible explanation is likely to be that in addition to substituting lower cost labor for higher cost labor, self-employed dental hygienists are less likely to recommend the services of more expensive specialists.

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8 The study did examine two outcome measures to look for evidence of quality being affected by the substitution of nurse practitioners for doctors, although neither would seem conclusive. One was infant mortality rates, which showed no change associated with the increased prescribing authority of nurse practitioners. The other was malpractice premiums for doctors, which also did not rise in states with greater authority given to nurse practitioners. This finding is not necessarily compelling since the ability to win a malpractice case against a doctor depends on the responsibilities assigned doctors relative to nurse practitioners in a specific state. If an error by a nurse practitioner, operating without a doctor's supervision, leads to harm for a patient, it is presumably more difficult to win a malpractice suit against a doctor than if the nurse practitioner was operating under the doctor's oversight.

If it turns out that nurse practitioners and dental hygienists are in fact both less likely to recommend unnecessary use of specialists, then this is not only a source of cost-saving, it actually implies better care. Certainly both the link between the use of specialists and the use of nurse practitioners and dental hygienists need to be more carefully investigated, as well as the possible negative impact from not seeing specialists when their services are required. But these studies suggest the possibility of substantial benefits from using these professionals in place of doctors and dentists beyond the direct cost-savings. In any case, both studies indicate that the pay of doctors and dentists are highly responsive to changes in demand.

The other major point worth mentioning from this literature is evidence found in Hall et al. (2011) that many highly educated immigrants are working at jobs with skill requirements that are far below their level of educational attainment. This indicates there are substantial barriers to highly skilled immigrants trying to find work in their area of training. As noted in the prior section, in the case of physicians and dentists the barriers are quite explicit. If a person was not trained in a U.S. medical residence program, they are not able to be licensed as a doctor in the United States.<sup>9</sup> In the case of dentists, it is a requirement for licensing to have been trained in either a dental school in the United States or an accredited school in Canada.

If there are a large number of immigrants who have training in their home countries as doctors or dentists, there would be large potential gains to create a path for these people to practice their profession in the United States, after first getting whatever additional training is necessary to meet U.S. standards, and then taking the necessary licensing exams. While creating such a path would likely lead to more foreign professionals coming to the United States, this would simply increase the benefits from the standpoint of the United States.<sup>10</sup>

## **Further Evidence on the Impact of Professional Restrictions on the Earning of Highly Paid Professionals**

In an effort to get additional insights into the relationship between restrictions on professional practices and compensation in highly paid professions, we replicated and extended some of the earlier tests in the literature. Our results are at best ambiguous.

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<sup>9</sup> There are apparently some exceptions to this rule for doctors who are extraordinarily accomplished in their home countries.

<sup>10</sup> There is an issue of brain drain from developing countries if a large portion of the professionals they train emigrate to the United States or other wealthy countries. This could be countered by refunded a portion of the gains, for example the income tax on the earnings of immigrant doctors, to the home country. That should in most cases allow for the training of several professionals for everyone that comes to the United States.

First, since there is an obvious gender aspect to the differences in pay between the most paid professionals and their lower paid counterparts. While there has been a huge opening to women in all three professions, they still remain disproportionately male, as shown in **Table 4**. By contrast, lesser paid professions in the same area are all disproportionately female. This is changing rapidly over time, with a much lower gender imbalances among younger cohorts in all three occupations. However, there continue to be large imbalances in the opposite direction in many of the lower paying professions, like registered nurses and dental hygienists.

We next tried to assess the extent to which a broader scope of practice for lower paid professions affects the pay of higher paying professions. Our analysis used data from the American Community Survey for the years 2010–2014. In each case, the dependent variable is the log of the hourly wage [of relevant profession divided by the state’s per capita income in the relevant year. Following Kleiner and Park (2014) we ran a series of tests with basic equation is of the form:

$$1) \ln \text{Earnings}_{ist} = \alpha + \beta R_{st} + \gamma X_{ist} + O_{st} + \delta_s + \eta_t + u_{ist}$$

where earning are the hourly wage for individual  $i$ , in state  $s$ , at time period  $t$ ,  $R$  refers to the relevant restriction or regulatory issue,  $X$  is a vector of standard individual characteristics, such as age, education, gender, and race for each person,  $O_{st}$  is the per capita income in the state at time  $t$ ,  $\delta_s$  and  $\eta_t$  are state and year fixed effects, respectively; and  $u_{ist}$  is the error term. In contrast to the findings of Kleiner and Park, most of the tests did not find a clear relationship between the regulation in question and pay levels for the higher paying occupation. In the case of doctors, we tested physicians’ hourly pay against both an overall measure of the capacity of nurse practitioners and their ability to prescribe drugs without the supervision of a doctor.<sup>11</sup> A variety of specifications with both variables did not find a significant effect of the measures of the independence of nurse practitioners on the average pay of physicians.<sup>12</sup> A test of the average pay of physicians against the percentage of public board members on the state licensing board (presumably a proxy for the degree of outside control on physicians) also did not find a significant relationship.

Similarly, regressions that tested the hourly pay of dentists against an index of the freedom of practice of dental hygienists also did not find a significant relationship.<sup>13</sup> We also tested dentists’ pay against the ability of dental hygienists to practice independently. Here also, there was no significant relationship.

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11 The index was compiled by the Lugo et al. (2007). Data on the number of public members on state medical boards was compiled by collecting information from the websites of state boards. The full list is available upon request.

12 Regression results are available from the author on request.

13 The index of the independence of dental hygienists was compiled by the American Dental Hygienists Association (2015).

We also tested the average hourly pay for lawyers against pass rates for the state bar exam against. These tests found no significant relationship, although there was a highly significant negative relationship in tests that did not control for state income.<sup>14</sup>

When we measured the pay of nurse practitioners and dental hygienists against these same indexes, we did find a positive and significant relationship. The test found that a one percent increase in the index of legal capacity was associated with a 2.0 percent increase in average hourly pay. The results are shown in **Table 5**.

Similarly, tests of the impact of legal capacity of dental hygienists on the average wages of dental hygienists found a strong significant positive relationship. The test found that a one percent increase in the measure of legal capacity was associated with an 11 percent increase in the pay of dental hygienists. The test results are shown in **Table 6**.

While it is reassuring that these tests find that greater legal independence does raise the pay in the profession directly affected, the results also showed that the legal capacity of workers in the lower paying profession does not have an impact on pay in the corresponding higher paying profession. This result is perhaps not surprising given the limitations of the data. First, the data used in these tests were not ideal since it did not capture any changes in the legal structure over the period examined. The data on the legal capacity of nurse practitioners was from 2006. It applied the same rules over the whole period, although there were undoubtedly some changes in rules in some states which were not picked up in our data. The legal status of dental hygienists is taken from 2015. It applies the same rules to the whole period from 2010 to 2014. Again, insofar as there were changes in the state rules over this period they are not picked up in these data.

Apart from the quality of these data, as noted in the discussion in the previous section, it might be unreasonable to expect too much of a relationship between liberalizing the rules for these professions and the pay of physicians and dentists. In both cases, the lesser paying profession is directly competing with the lower paying portion of the higher paying profession. With such a large gap between the pay of specialists and general practitioners in both professions, the direct impact of an increased role for the lower paying profession would inevitably be limited. The larger impact found in Kleiner and Park would almost certainly have been attributable at least in part to reduced demand for specialists, presumably because nurse practitioners and dental hygienists are less likely to refer patients to specialists.

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<sup>14</sup> There was also a strongly significant negative relationship between the percentage of public board members on medical licensing boards and the average hourly earnings of doctors in regressions that did not control for state income levels.

However, there are other factors that affect the demand for specialists, most notably the compensation practices of insurance companies. As insurers have put up higher bars for patients to see specialists, and also required large co-pays, it is likely that the demand for specialists has been reduced in recent years. If this is the case, then the extent to which a larger role for nurse practitioners can affect the demand for specialists would be more limited.

While the number of dental hygienists is comparable to the number of dentists, there are only one fourth as many nurse practitioners as there are doctors. This means that even a substantial expansion of their role can only have a limited direct effect on the demand for doctors. There are other health care professionals who will also compete to some extent with doctors, including nurse midwives, nurse anesthetologists, and radiation therapists. The number of workers in these three occupations is too small to be able to test their impact on the demand for doctors using the ACS, however it is possible that a measure of the restrictions on the full set of occupations that compete with physicians would show a substantial impact on the demand for their services.

In examining pay patterns of lawyers by state it is less simple to determine legal restrictions that might affect the demand for their services. While paralegals are at least a partly competitive profession (also complementary), there are less clearly drawn legal boundaries for the work that can be done by a paralegal, as opposed to requiring a lawyer. For this reason, we did not directly test the impact of any legal restrictions on the practices of paralegals. A simple test of the pass rate for state bar exams against average hourly pay for lawyers found a significant negative relationship, however this relationship became altogether insignificant in a regression that included state per capita income.

It is likely that factors like the ease with which a will can be filed or the sale of a house can be completed would affect the demand for lawyers. Unfortunately, there do not appear to be clear standards for comparing the extent to which state laws facilitate these sorts of routine transactions. In principle, it should be possible in the vast majority of cases to complete these processes without the assistance of a lawyer. Clearly state law can simplify these tasks, but we do not have good measures to the extent state laws vary in this respect.

## **The Potential Impact of International Competition on the Earnings of Highly Paid Professionals**

Doctors, dentists, and lawyers have all been largely protected from international competition even as trade has hugely expanded as a share of GDP over the last four decades. While this is partly due to the nature of the services involved, it is also in part the result of a deliberate decision to leave protectionist barriers in place. This is very clear in the case of physicians and dentists. In the former case, only doctors who have completed U.S. residency programs are able to practice medicine in the United States.<sup>15</sup> In the case of dentists, to get a license it is necessary to graduate from a dental program in the United States, with the exception that Canada also now has some programs that are accredited by the United States as well.

There are three main routes through which increased international competition might affect prices and pay in these highly paid professions. First, there can be more foreign trained professionals allowed to practice in the United States. Current law explicitly excludes most foreign trained professionals from practicing as either physicians or dentists in the United States. The second route is through medical travel. This is primarily an issue with physicians. While there are a number of medical procedures where the difference in price could be large enough to justify foreign travel, this would generally not be the case with dental procedures, although differences in cost might justify short distance travel for those living near the Mexican border. The third route is through the emigration of retirees. There are already a substantial number of retirees living outside the United States. The large gap between the cost of health care in the United States and other countries means there are large potential gains from making it possible for retirees to use Medicare benefits outside of the United States. The potential gains through these avenues are discussed below.

### **Increased Use of Foreign-Trained Professionals**

There clearly are legitimate public health concerns in ensuring that doctors and dentists trained in other countries have been educated to U.S. standards. However these concerns can surely be addressed in a manner that creates a process through which foreign-trained professionals can demonstrate their proficiency and then work in the United States. Just as the United States was able to put in place a reciprocal accreditation process for dental schools with Canada in 2011, it should be possible to establish such processes on a broader basis (American Dental Education Association 2014). In principle, it should be possible for doctors and dentists in countries with comparable standards to the United States to be tested for proficiency and then work in their profession in the United States with the same freedom as someone who was trained here. This has already been done within the European Union where doctors must meet a common set of standards and are then free to practice in any country within the European Union (Kovacs et al. 2014).

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<sup>15</sup> There are exceptions, with prominent foreign physicians generally able to get licensed to practice in the United States, but the typical doctor practicing in Europe or Canada would not have the option to practice in the United States without completing a U.S. residency program.

Even in developing countries with lower professional standards it should be possible to set up a process whereby students or practicing professionals could be trained to U.S. levels. In addition to the elimination of formal trade barriers, the creation of uniform standards in a wide range of areas has been a major component of every trade pact negotiated over the last quarter century. The removal of barriers that needlessly prevent workers in these highly paid professions from working in the United States could have been an item in these trade pacts.

Any projection of the number of foreign trained physicians who would come to the United States if there was a standardized licensing process in place will necessarily be very rough. There is data on the number of foreign-born and foreign-trained physicians now practicing in the United States, which can provide a useful point of reference. These are physicians who in almost all cases went through a U.S. residency program in addition to their foreign training. According to the American Medical Association, approximately 25 percent of practicing physicians in the United States were international medical graduates (IMG), meaning they graduated from a medical school outside of the United States (American Medical Association 2016). Roughly a fifth of these IMGs graduated from medical schools in the Caribbean. These IMGs were likely U.S. citizens who went overseas for medical school, which leaves roughly 20 percent of practicing physicians as foreign-born and foreign trained.

The question is how many more IMGs would be practicing in the United States if foreign trained physicians had the opportunity to take part in a U.S. equivalent residency program in their home country, and then have the same right to practice in the United States as a U.S. citizen who had completed all their training within the United States. Under current rules, IMGs are effectively subject to a quota system that limits the number of residency slots in the United States that are open to IMGs (Desbiens and Vidaillet 2010). An open system would both allow IMGs to have a larger share of the U.S. residency slots, since it seems that many are rejected in favor of less qualified U.S. graduates, but also allow IMGs to have equivalent training to residency in their home countries.

In addition to allowing for an increase in the overall supply of doctors, the logic of greater openness to IMGs is quite simple: it's cheaper to train doctors in other countries than the United States. Given the large gap between the pay of physicians in the United States and other wealthy countries, and the even larger gap between the pay of physicians in the United States and developing countries, it is reasonable to expect a large supply response to a policy that allowed foreign trained physicians to practice in the United States as long as they completed an equivalent residency program.

**Table 7** shows the change in annual inflows, the cumulative change after ten years, and the percentage increase in physicians that would result from this policy. The rows assume alternatively that the number of IMGs entering the United States each year increases by 50 percent, 100 percent, and 150 percent from 6,300, the number of IMGs accepted into U.S. residency programs in 2015 (Education Commission for Foreign Medical Graduates 2015).<sup>16</sup>It is worth noting that ECFMG reports that the number of IMGs who applied to U.S. residency programs in 2015 was just under 12,400, almost twice the number accepted. This might give some indication of the likely increase in foreign IMGs that would enter the United States in a more open system.

In the low increase case, the cumulative gain after 10 years would be 65,000, an increase of 7.6 percent in the number of physicians who are projected to be practicing in the United States in 2025. In the middle case the increase would 130,000, or 15.1 percent of the physicians practicing in that year. In the high end the increase is 195,000 or 22.7 of the baseline projection. While these numbers are large relative to the projected supply of doctors, they are still likely to understate the number of foreign trained physicians who would be practicing in the United States under a more open system. These projections are based on an inflow of new medical school graduates. In a more open system it is likely that many practicing physicians in other countries would opt to practice in the United States. In short, a more open system of licensing of foreign trained physicians would likely have a large impact on the supply of doctors in the United States.

## Medical Travel

A second route through which foreign professionals can be placed in competition with their counterparts in the United States is through medical travel. There are huge gaps between the price of major medical procedures in the United States and other countries. These gaps in price are substantial when comparing the cost in other wealthy countries, but the price can be an order of magnitude when comparing prices in the United States with the prices charged in countries like Thailand and India, which have sought to cultivate their medical travel industry. In these cases, procedures are performed in modern facilities comparable to those in the United States or Western Europe.

The average price of hip replacement surgery in the United States is \$40,400 compared to less than \$12,000 in the United Kingdom as shown in **Table 8**. (There is enormous variation around this \$40,400 figure within the United States, which raises another set of issues.) The cost in Argentina is just \$3,600, less than one-tenth of the cost in the United States, for a gap of more than \$36,000.

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<sup>16</sup> The projection for the total number of doctors practicing in the United States in 2025 (860,000) is taken from Dill and Salsberg (2008).

Heart bypass surgery cost an average of \$73,400 in the United States, compared to \$14,100 in the United Kingdom and \$8,900 in Argentina. These gaps indicate an enormous potential for savings if a substantial portion of major surgeries needed by people in the United States were performed in lower cost countries.

**Table 9** shows the total number of each of these four procedures performed in the United States in 2010. The second column shows an estimate of potential savings that assumes that total costs, including travel expenses, are \$10,000 above the costs in the low cost country, which is Argentina in each of these cases. (Argentina is an outlier among this group of developed countries. A full list, which included modern facilities meant to accommodate medical travel in countries like India and Thailand, would likely show several countries with prices comparable to those in Argentina.)

The last column shows the potential savings if all the surgeries in each category in 2010 had been performed in the low cost country with the \$10,000 travel cost assumption. The savings would have been \$7.2 billion in the case of hip replacement surgery, \$5.4 billion in the case of knee replacement surgery, and \$19.6 billion for heart bypass surgery. The total potential savings for these four surgeries would have been \$37.3 billion.

While it is unrealistic to imagine that most of these medical procedures would be performed in other countries, it is plausible to think that a substantial fraction would be, if patients were given a portion of the savings as an incentive. If insurance companies and government health care programs split the savings from having surgeries performed in low cost countries, then many people would likely take advantage of this opportunity. The possibility of getting the equivalent of several months' pay for a typical worker, in exchange for having an operation performed in a high quality facility in another country, would be attractive to many people. Most of these procedures are not performed on an emergency basis, so it would be possible for patients to make plans with their families, their regular physicians, and the facilities in the host countries to schedule an operation. If 30 percent of these procedures were performed in other countries, the savings would be over \$11 billion annually. A fuller list of procedures is likely to take the potential savings to more than \$15 billion and possibly as much as \$20 billion annually.<sup>17</sup>

The biggest factors obstructing medical travel are the lack of an appropriate institutional structure. First, few people would be likely to travel to another country for a major medical procedure if they could not be assured of the quality of the care. There are currently private accreditation groups, but there have been issues raised about their integrity. It would be useful to have an inter-governmental

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<sup>17</sup> Issues connected with medical travel are discussed in Matoo and Rathindran (2006).

organization that could certify that facilities met high quality standards. To a large extent such an organization could rely on existing national systems, where countries have a track record of maintaining high standards. In other countries, it would likely be necessary to institute a system of inspections. This could be financed by a tax on medical travel.

A second important issue would be to establish a clear system of legal liability that could ensure patients they would be compensated in the event that a procedure was not carried through properly. The system need not replicate the U.S. malpractice system, but it should provide patients with the confidence that they will be compensated for any additional medical care that proves necessary as a result of failed procedures, as well as any lost earnings.

The third issue is that the vast majority of these procedures are paid for by third parties, either government programs or private medical insurance. As a result, the savings would not directly accrue to patients, giving them no incentive to consider medical travel. This could be remedied by setting up a system where the patient is rebated a portion of the savings. For government programs this could be done directly. For example, Medicare could rebate half of the savings it would receive from having a procedure carried through outside of the United States. Private insurers could also adopt similar policies. This also would likely involve some regulatory issues since regulatory boards would have to authorize the practice. That could happen on a state by state basis, or alternatively the federal government could impose rules that require state regulatory boards to allow rebates for medical travel.

There are many reasons that patients may not want to travel to a foreign country for a medical procedure, given the stress that can be associated with a major operation. However, there is no obvious reason not to give people the option and to share in the savings, if they choose to go this route.

There is an issue that when procedures are performed in developing countries doctors and other health care professionals may be pulled away from treating the host country's population, reducing their access to health care. In principle, the host countries could tax medical travel and use the revenue to train additional health care professionals, thereby ensuring that the host country's population benefits as well. The United States government cannot ensure that such a system is put in place in other countries, but it certainly can encourage the practice.

While there are substantial potential savings from having major medical procedures performed in lower cost countries, only a fraction would come at the expense of doctors. If it is assumed that one-third of the cost of these medical procedures is attributable to doctors' fees, and that between 10

and 30 percent of \$100 billion in potentially outsourceable surgeries could eventually be performed outside of the United States, then the implied reduction in the demand for doctors would be between \$3 billion and \$10 billion annually, based on 2014 levels of demand and prices.

## **Emigration of Retirees**

A third channel through which international competition could exert downward pressure on the pay of doctors is through increased emigration among retirees. The issue here is that retirees may often have an interest in living in other countries. By definition, they no longer are tied to the United States by their work. While many may have family ties that make them reluctant to move to other countries, many people in the United States also have family ties to people in other countries. This will be increasingly true in the decades ahead as a larger share of the retired population will be foreign-born. The percentage of retirees who opt to leave the United States can make a substantial difference in the demand for health care.

Currently a bit more than 1.5 percent of the people receiving Social Security retiree, spousal, or survivor benefits are living outside of the country.<sup>18</sup> As noted above, this number would be likely to increase in the decades ahead even with no change in policy due to the growing share of the retired population that are foreign born. In 2014, 13.2 percent of the population over age 65 was foreign born. The foreign born share of the over 65 population is projected to rise to 16.9 percent by 2030, reach 20.2 percent by 2040, and eventually almost double to 25.8 percent of the over 65 population by 2020 (Census Bureau 2015). While there do not appear to be projections for the number of retirees who will decide to move back to their country of birth, it is reasonable to believe that the number of older immigrants who opt to spend their retirement outside of the United States will be larger than the number of native born retirees.

However, the number of retirees who choose to live outside the country could be substantially larger if the government adopted policies to encourage emigration. The simple logic of this policy is that health care is far cheaper in other countries than in the United States. Since the bulk of retiree health care costs are already covered by Medicare and Medicaid, the government could save a substantial amount of money by encouraging retirees to take advantage of the health care systems in other countries, rather than depending on the U.S. health care system. It could reimburse other countries for the cost of caring for retirees from the United States (even including some premium over their costs) and still have large savings.<sup>19</sup> There are already reimbursement agreements like this in place

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<sup>18</sup> This is taken from Social Security Administration (2014a) and (2015a).

<sup>19</sup> There is already an agreement for Social Security benefits under which other countries integrate their programs with the U.S. Social Security system. This way benefits for people who worked in other countries are adjusted for the benefits they receive from the United States. (This is described on page 12 of Social Security Administration (2015a).)

within the European Union (EU) under which governments agree to reimburse each other for the cost of medical care received by their nationals in other EU countries (Footman et al. 2014).

If a substantial number of retirees opted to emigrate to other countries it would have a sizable impact on the demand for health care in the United States. According to Center for Medicare and Medicaid Services (CMS), the average health care expenses of a person over age 65 are roughly 260 percent of the overall average (Center for Medicare and Medicaid Services 2010).<sup>20</sup> As a result, in 2010 the over 65 population accounted for almost 34 percent of total spending, even though they were just 13.0 percent of the total population.<sup>21</sup> In addition to a rising foreign-born share of the over 65 population, the over 65 share of the total population is projected to rise rapidly over the next two decades, reaching 20.7 percent by 2035. Assuming no change in the distribution of health care costs by age, this would imply that the over 65 population would account for more than 47 percent of health care spending in 2035 as shown in **Table 10**.

According to the OECD (2014), per capita spending on health care in the United States in 2013 was \$8,700 compared to an OECD average of less than \$3,500 (in 2013 purchasing power parity dollars). Germany was the second highest spender among major countries at just over \$4,800 per capita, with Canada third at under \$4,400. Per capita spending in the U.K. was under \$3,200 and several of the lower income countries in the OECD spent less than \$3,000 per person. This is shown in Column 1 of **Table 11**.

Column 2 shows per capita spending for the over 65 population under the assumption that the ratio of per capita spending for the over 65 population in these countries is 260 percent of per capita spending for the population as a whole. This is almost certainly a substantial overstatement of the relative costs in other countries, since spending is not as skewed towards the elderly in other countries.

Column 3 shows a projection of per capita health care spending for the over 65 population in 2035 (in 2013 purchasing parity dollars) under the assumption that real per capita spending increases at annual rate of 1.5. This is somewhat more rapid than the recent rate of growth in per capita health care spending across the OECD.

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20 See: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Age-and-Gender.html>.

21 Center for Medicare and Medicaid Services (2010), Table 1, share of the population from Social Security Administration (2015b).

Column 4 shows the difference between projected per capita government spending on Medicare in 2035 and the projected per capita cost of health care in each country in 2035.<sup>22</sup> This is a projection of the difference between what the government will be spending on Medicare for each beneficiary in 2035 and what it would cost a beneficiary to get care in other countries. In the case of Germany this gap is more than \$1,500 a year and in some of the lower cost countries the gap is more than \$10,000 a year.

Column 5 adds in a projection of per capita Medicaid spending. Medicaid spending adds almost \$2,900 a year (in 2013 dollars) to average per capita spending. This substantially increases the gap between what the government is projected to spend on Medicare beneficiaries and the per person cost of health care in other OECD countries.<sup>23</sup> The average figure in this case would be somewhat misleading since most of the over 65 population will not be receiving Medicaid. The gap between combined Medicare and Medicaid spending for dual beneficiaries would actually be considerably larger than the numbers shown in Column 5.

There are a few points worth noting about the size of the spending gaps shown in Columns 4 and 5. First, they are likely to understate the true gap because the calculations assume that spending on the elderly in other countries is as out of line with overall spending as in the United States. This will not be true in most, if not all, cases. Second, a substantial portion of the health care costs of the over-65 population are not covered by Medicare. If retirees remained in the United States and were on Medicare, they would incur these additional expenses. **Table 11** is comparing government spending on beneficiaries in the United States with *total* per person health care spending in other countries. The potential savings to beneficiaries from having the option to buy into other countries' health care plans would also include their savings on out of pocket spending and private insurance in the United States. This means that the total per person savings for a retiree buying into a health care system in other countries would be substantially larger than the amounts shown in **Table 11**. The projected gap between total per capita spending in the United States and spending in other countries is more than \$15,000 per person in the case of high cost countries and more than \$20,000 per person in the case of the lower cost countries.

Finally, it is important to keep in mind that these figures are for per person savings. This means that for a retired couple moving to Canada the potential savings would be over \$6,500 annually or in the

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22 The projection for per capita spending on Medicare in 2035 is taken from Center for Medicare and Medicaid Services (2015). These projections run through 2024. Real per capita costs were assumed to grow at the same rate after 2024 (2.1 percent annually) as they did from 2023 to 2024. The numbers were deflated using the CPI-U to be put in 2013 dollars.

23 Per capita Medicaid costs were obtained by taking 2010 per capita spending for Medicaid beneficiaries over age 65 from Center for Medicare and Medicaid Services (2010), Table 10, and projected the same rate of increase in real per capita costs as for Medicare.

case of Australia more than \$10,000 annually, even before counting the savings on out of pocket health care costs. In the case of Mexico the potential savings to a couple would be over \$30,000 a year, just based on Medicare. If the comparison is with total health care spending in the U.S. the savings for a couple would be more than \$40,000 a year. By comparison, the median income for a couple over aged 65 in 2013 was just over \$50,000. For a single individual it was just \$18,600 (Social Security Administration 2015c). This means that the potential savings from taking advantage of the health care system in another country could be comparable in size to the income of much of the elderly population. Gaps of this magnitude would allow the federal government to have savings on Medicare for retirees who chose to emigrate, while also allowing some premium over costs for the host country, and still provide substantial incentives to beneficiaries to get care elsewhere.

There would be complications associated with a mechanism that allowed seniors to buy into other countries' health care systems. It would have to be designed to limit the risk of adverse selection on both sides. (If the immigrants to a country were relatively unhealthy, a compensation system based on average costs would cause them to lose money. On the other hand, if people emigrating were healthier than average, the finances of Medicare would be hurt by making payments based on age-group averages.) There also will be issues with people who want to reverse their decision. They may opt to emigrate and then return to the United States at a later point.

While these and other issues will make the process of designing a reimbursement system more difficult, they are not qualitatively different than issues that Medicare already faces with the options offered under the existing system. The people who have opted for the Medicare Advantage program have been healthier on average than most beneficiaries. The program has sought to adjust premiums to compensate for this problem. There are also cases that arise with people wanting to switch between insurance plans when they realize the plan they have chosen does not provide good coverage for a specific condition. It is not possible to find mechanisms that work perfectly and treat beneficiaries fairly in all cases, but providing an additional option to buy into another country's health care system should on net be a huge positive to retirees.

There is not a good basis for projecting the number of retirees who would decide to emigrate if given the option to use their Medicare payments to buy into another country's health care program. As noted earlier, already just over 1.5 percent of people Social Security beneficiaries live in other countries. It is reasonable to believe that this number will increase as the percentage of foreign born among the retired projected to double in the next two decades. If retirees were also provided a large financial incentive to emigrate, then clearly more would chose to do so. Any substantial movements of retirees are likely to further increase the flows as other countries develop both medical and living

facilities to accommodate them. If there are large communities of retirees from the United States in Mexico or Ireland, additional retirees may find it more attractive to relocate to these countries.

**Table 12** shows the impact on U.S. health care spending under the assumptions that alternatively five percent, 10 percent, or 20 percent of the retired population decides to emigrate to another country if given the option to use their Medicare payment to buy into their health care system. In the five percent case, this would reduce projected spending by 2.4 percent, in the 10 percent case the reduction would be 4.7 percent, and in the 20 percent case the reduction would be 9.4 percent. As a first approximation, it would be reasonable to assume that this would lead to a corresponding reduction in the demand for doctors.

### **Cumulative Effect on the Doctors' Compensation**

This section has discussed four channels through which the effective demand for domestically trained doctors can be reduced. These channels would both directly save money by using lower cost services, as well as indirectly offer savings by pushing down the wages for doctors. **Table 13** below gives a range for how large these effects are likely to be for each channel.

The largest and clearest potential source of gains is through allowing more foreign trained physicians to practice medicine in the United States. There clearly is a large potential supply of foreign trained physicians who already are near meeting U.S. standards, since the roughly half of the applicants to U.S. residency programs are rejected. If there was a policy put in place to actively encourage foreign trained physicians to practice in the United States, the numbers in Table 13 may well prove to be on the low side.

The next largest source of gain is from eliminating licensing restrictions that reserve tasks for physicians that other health care professionals are perfectly capable of doing. Another important dimension of these restrictions would be requiring specialists to do tasks for which general practitioners are fully qualified. The latter are less often legal requirements than norms of practice, which may be enforced by the threat of malpractice suits. The research discussed in this paper has focused on restrictions on the practice of nurse practitioners. However there are a wide range of health care professionals who may be able to substitute for physicians in various tasks. This list includes nurse midwives, nurse anesthetologists, and radiation therapists. As diagnostic technology develops, it is likely that more of the tasks now performed by physicians can be equally well accomplished by workers with considerably less training.

The potential gains from increased foreign medical travel and emigration of retirees are both substantial, although smaller than the first two items. There is likely to be an increase in both areas even without any policy changes, due to continuation of current trends. However there is a potential for large gains from policies that promote both trends. This is due to the enormous gap in the cost of health care between the United States and other countries. Policies that sought to take advantage of this gap would reduce its size.

In aggregate these policies would likely have a substantial impact on the pay of physicians in the United States. The elasticity of demand for health care is generally estimated to be quite low, usually around -0.2 percent (see Ringel et al. 2002). Assuming that the elasticity of demand for physicians is comparable to the elasticity of demand for health care more generally, even the 15 percent decline in the demand for physicians shown in the low scenario should be large enough to eliminate most or all of the differences between physicians' compensation in the United States and in other countries. Of course there would be some supply response, with fewer students from the United States opting to become physicians and some currently practicing physicians retiring earlier than they might have otherwise. Nonetheless, it seems quite plausible that policies designed to reduce protections for physicians in the United States could substantially reduce their pay relative to other workers and provide substantial economic gains.

## **Dentists**

As noted in section 2, there are opportunities to increase competition for dentists by allowing a broader scope for practice for dental hygienists. The evidence in Kleiner and Park (2010) indicated that the cost of dental care could be reduced with no loss in quality, by substituting dental hygienists for some of the procedures now performed by dentists. As is the case with substituting nurse practitioners for doctors, the savings found in that analysis would imply that the benefits go beyond just substituting the lower cost labor of dental hygienists for the higher priced labor of dentists, but likely also reflects less use of specialists in cases where their services may not be necessary.

In addition to the reduction in the demand for dentists that could result from greater use of dental hygienists, there is also the possibility that more foreign-trained dentists could be licensed to practice in the United States if there was a liberalized licensing regime. Unlike the situation with foreign medical graduates seeking admission to U.S. residency programs, there is not a pool of qualified or nearly qualified foreign trained dentists actively seeking to practice in the United States. While this makes it more difficult to project the number of foreign trained dentists who would practice in the United States with a more liberalized licensing regime, the projections for doctors should provide some guidance.

In the case of doctors, the number of foreign medical school graduates who applied for U.S. residency program was equal to 40 percent of the number of residency slots available. Since the disparity in pay between dentists in the United States and other countries is comparable to the disparity in pay among doctors, it would be reasonable to expect a comparable inflow of foreign trained dentists, if the licensing restrictions were relaxed. However since the current inflow of foreign trained dentists is near zero, in contrast with foreign trained physicians who comprise more than 20 percent of new residents, the impact would be twice as large. It would effectively increase the supply of new dentists by 40 percent annually.

**Table 14** indicates the impact that expanded scope of practice rules and a relaxation of restrictions on foreign trained dentists could have on the effective demand for dentists trained in the United States. The first row makes the same assumptions concerning the potential gains from expanding the scope of practice of dental hygienists as shown in **Table 14** for the expanding the scope of practice of nurse practitioners and related occupations. The second row doubles the potential impact of relaxing restrictions on foreign trained dentists, since the current inflow is near zero.

As can be seen, in the low case the effective impact on demand is a reduction of 18 percent, in the middle case 35 percent, and in the high case 55 percent. The impact on the price of dental care and earnings of dentists would be less than a comparable reduction in the demand for doctors since the demand for dental care is generally estimated to be somewhat more elastic than the demand for doctors. The elasticity is generally estimated to be between 0.5 and 0.7 percent (Nash and Brown 2012). Using the low end assumptions on the change in effective demand, the implied reduction in the price of dental services would be between 20 percent and 30 percent. In the middle case the reduction would be 35 percent 45 percent. As is the case with doctors, it would be expected that there would be some offsetting reduction in the supply of domestically trained dentists since some would opt for other professions and others would retire earlier than would otherwise be the case, but these changes in demand would be large enough to eliminate most or all of the rents in this area.

## Lawyers

As noted in section 3, there is not as clear a case of a competing profession with lawyers, as with doctors and dentists. While much of the work that is done by lawyers can be done by workers with less legal training, such as paralegals, it appears that the decision to use lawyers rather than paralegal workers is more attributable to norms of practice than legal prohibitions. Nonetheless, there is

clearly a substantial difference in the pay of lawyers and paralegals as shown in **Table 15**. This table gives average hourly pay by state for the two professions for the year 2010-2014, using the ACS.<sup>24</sup>

In every state the average pay of lawyers is at least twice as high as for paralegals and in some states it is almost three times as high. This should provide a strong incentive to substitute paralegals for lawyers at relatively routinized tasks like reviewing the mortgage and transfer documents at the closing of a house sale or drafting a will.<sup>25</sup> Ideally these processes should be simple enough so that in most cases no legal assistance is required, but the use of lawyers for these purposes should be rare. Many states have taken steps to simplify legal processes in some areas, but there is undoubtedly much more that can be done.

As noted earlier, many of the highest paid lawyers are involved in areas of practice that are strongly associated with rent seeking. **Table 16** shows the average compensation of partners in law firms by areas of specialization. As can be seen, the areas in which partners have the highest compensation are corporate law, intellectual property law, and tax and ERISA law. **Table 17** shows the number of lawyers in each of practice. Intellectual property law stands out as a large and rapidly growing area of law, employment almost 12 percent of all lawyers in 2014 according to the data from the American Bar Association.

While it is not possible to eliminate the sorts of legal actions that create demand for lawyers in corporate law, the demand for lawyers in intellectual property law is entirely the result of patents, copyrights, and other types of intellectual property claims. As these forms of property have been extended in both length and scope, it has naturally led to increased demand for lawyers services in this area. One of the main benefits of reform of intellectual property would be a reduction in the resources tied up in legal actions related to protecting or defending against intellectual property claims.

There is a similar story with tax law, although the number of lawyers employed is considerably lower. Many of the highest paid tax lawyers are designing creative mechanisms for corporations to minimize their tax liability. One of the dividends of a corporate tax reform, that simplified the system while reducing the possibilities for avoidance, is that fewer resources would be committed to developing legal strategies to avoid tax liability.

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24 In some states the sample size is too small to provide a reliable estimate.

25 This is an area that seems ripe for a new business that could handle the necessary legal documents for a house closing at a fraction of the cost charged by lawyers, by relying on well-trained paralegals.

As noted earlier, there are limited opportunities to reduce the pay of lawyers through foreign competition. Certainly insofar as possible, it would be desirable to standardize procedures so that more lawyers from other countries could do legal work in the United States or in their home country. But it is likely to be the case that there will still be substantial areas of law where the differences between the United States and most other countries are large enough that a foreign trained lawyer would need a considerable amount of additional training to be fully competent to practice in the United States.

In short, while the rents earned by lawyers surely can be reduced, the mechanisms are less clear than with doctors and dentists. Paralegals can do many of the tasks now performed lawyers, but it seems the barriers in most cases are not legal ones, but rather norms of practice. There are also many areas in which legal processes can be structured so as to limit the need for lawyers. There has been progress in many of these areas, so that procedures like drafting a will generally do not require the assistance of a lawyer.

The highest paying areas of law are areas in which lawyers are assisting in the appropriation of rents, notably intellectual property law and tax law. The most likely way in which the rents earned by lawyers in these areas can be reduced is by reducing or eliminating the opportunities for rents in these areas. With a more narrowly drawn scope for intellectual property claims and a simplified corporate tax code, many of the opportunities for rent-seeking would be eliminated as would the excessive pay of lawyers in these areas of practice.

## **Conclusion**

This paper has examined the evidence for the existence of rents in the pay of physicians, dentists, and lawyers. It notes evidence showing that workers in the former two professions are paid considerably higher wages than their counterparts in other wealthy countries. The gap is reduced somewhat when adjusting for differences in per capita income, but is still substantial. In the case of lawyers, there appears to be a considerable premium over workers with comparable education attainment in other occupations. Also, this premium expanded substantially in the 1990s, as highly educated workers in other occupations exposed to international competition saw their wages fall relative to lawyers.

In the case of both physicians and dentists, explicit legal barriers protect them from both foreign and domestic competition. There is reason to believe that much, if not all, of the rents earned in

these occupations could be eliminated by reducing the size of these barriers. In particular, increased immigration could play a large role in bringing the pay in these professions in line with pay in other wealthy countries.

In the case of lawyers, the barriers seem to be largely norms of practice. For example, it is standard to have a lawyer present at a mortgage closing even though this is work that almost certainly could be performed by someone with less training, and may not even be necessary at all. There are also areas of large rent seeking, such as intellectual property law and corporate tax law, where lawyers tend to be highly paid. The high pay in these areas presumably stems from the potential rents to be gained. The key to reducing rents for lawyers is to reduce the potential rent in these areas.

The amount of potential rent in these professions is substantial. Simple calculations suggest it is in the range of \$100 billion to \$200 billion annually (0.6 percent to 1.1 percent of GDP). This has the same impact on the economy of a tax of this size going to support a completely wasteful bureaucracy. These rents are both a drag on growth and a substantial contributor to inequality, since these rents are being paid to people at the top end of the income distribution. Reducing these rents would both increase growth and lessen inequality.

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## Tables and Figures

**TABLE 1**

### Average and Median Net Income for General Practitioner Dentists, Specialist Dentists, and All Dentists

(2014 dollars)

Type of Dentist	Average Net Income	Median Net Income
<b>General Practitioners</b>		
All Owners	\$183,340	\$160,000
All General Practitioners	\$174,780	\$150,000
<b>Specialists</b>		
All Owners	\$344,740	\$290,000
All Specialists	\$322,200	\$250,000
<b>All Dentists</b>		
All Owners	\$213,690	\$180,000
All Dentists	\$201,920	\$170,000

Source and notes: 2015 Survey of Dental Practice from the American Dental Association (2015a).

**TABLE 2**

### Average and Median Net Income for Dentist Specialties

(2014 dollars)

Type of Dentist	Average Net Income	Median Net Income
Oral and Maxillofacial Surgeons	\$413,410	\$348,000
Endodontists	\$325,840	\$290,000
Orthodontists and Dentofacial Orthopedists	\$301,760	\$245,000
Pediatric Dentists	\$347,310	\$273,000
Periodontists	\$257,960	\$200,000
Prosthodontists	\$221,030	\$175,000

Source and notes: 2015 Survey of Dental Practice from the American Dental Association (2015a).

**TABLE 3**

### Potential Savings from Eliminating Rents

(2014 dollars)

	Number	Average Pay	Average Pay Other Countries	Savings with No Gap	Savings with 50% Gap
Doctors	800,000	\$250,000	\$150,000	\$80 billion	\$40 billion
Dentists	150,000	\$202,000	\$60,000	\$21.2 billion	\$10.6 billion
Lawyers	1,268,000	\$260,000	n.a.	\$108.4 billion	\$54.2 billion
<b>Total</b>				<b>\$209.6 billion</b>	<b>\$104.8 billion</b>

Source and notes: Author's calculations, see text.

**TABLE 4**

<b>Gender Composition of Professions</b>		
(percent)		
<b>Occupation</b>	<b>Male</b>	<b>Female</b>
Lawyers	64.9	35.1
Paralegals	17.4	82.7
Misc Legal Support Workers	27.6	72.4
Dentists	73.2	26.8
Pharmacists	45.2	54.8
Physicians and Surgeons	65.0	35.0
Physician Assistant	31.9	68.1
Radiation Therapist	30.2	69.8
Registered Nurses	9.4	90.6
Nurse Anesthetists	40.0	60.0
Nurse Practitioners and Midwives	7.9	92.1
Dental Hygienists	3.4	96.6
Emergency Med Techs and Paramedics	69.6	30.4

Source and notes: CEPR analysis of American Community Survey, 2010–2014.

**TABLE 5**

<b>Regression: log hourly wage of nurses against nurse legal capacity</b>								
Controls: gender (dummy for female)								
Race/ethnicity (dummies for black, hispanic, and other)								
age								
age <sup>2</sup>								
education (dummies for high school, some college, college, advanced)								
per capita income								
year (dummies)								
state (dummies)								
Code: reg ln_rw nurse_legal female black hispanic other age agesq ed2-ed5 year2-year5 per_cap_inc state2-state51 if occs==11, robust								
<b>ln_rw</b>	<b>Coef.</b>	<b>Robust Std. Err.</b>	<b>t</b>	<b>P&gt; t </b>	<b>[95% Conf. Interval]</b>		<b>N</b>	<b>R<sup>2</sup></b>
nurse_legal	0.020519	0.011246	1.82	0.068	-0.00153	0.042566	5,857	0.0615
female	-0.09668	0.02354	-4.11	0	-0.14283	-0.05053		
black	-0.05306	0.032296	-1.64	0.1	-0.11637	0.010254		
hispanic	0.016359	0.030121	0.54	0.587	-0.04269	0.075407		
other	-0.04138	0.034332	-1.21	0.228	-0.10868	0.025924		
age	0.035062	0.004479	7.83	0	0.02628	0.043843		
agesq	-0.00036	4.86E-05	-7.37	0	-0.00045	-0.00026		
ed2	-0.50365	0.155754	-3.23	0.001	-0.80899	-0.19832		
ed3	-0.42463	0.082362	-5.16	0	-0.58609	-0.26317		
ed4	-0.24403	0.070247	-3.47	0.001	-0.38174	-0.10633		
ed5	-0.16318	0.063546	-2.57	0.01	-0.28776	-0.03861		
per_cap_inc	-9.66E-007	4.33E-006	-0.22	0.824	-9.46E-006	7.53E-006		

Source and notes: CEPR analysis of American Community Survey, 2010–2014.

**TABLE 6**

**Regression: log hourly wage of dental hygienists against hygienist state score**

Controls: gender (dummy for female)  
 race/ethnicity (dummies for black, hispanic, and other)  
 age  
 age<sup>2</sup>  
 education (dummies for high school, some college, college, advanced)  
 per capita income  
 year (dummies)  
 state (dummies)

Code: reg ln\_rw hygienist\_score female black hispanic other age agesq ed2-ed5 year2-year5 per\_cap\_inc state2-state51 if occs>=12, robust

ln_rw	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]		N	R <sup>2</sup>
hygienist_score	0.117288	0.050039	2.34	0.019	0.0192	0.215376	8,644	0.119
female	-0.00417	0.054341	-0.08	0.939	-0.11069	0.102347		
black	-0.08054	0.044469	-1.81	0.07	-0.16771	0.006634		
hispanic	-0.09482	0.032508	-2.92	0.004	-0.15854	-0.03109		
other	-0.02718	0.030743	-0.88	0.377	-0.08744	0.033082		
age	0.042856	0.003793	11.3	0	0.03542	0.050291		
agesq	-0.00043	4.27E-05	-9.96	0	-0.00051	-0.00034		
ed2	-0.05641	0.154333	-0.37	0.715	-0.35894	0.246124		
ed3	0.298039	0.148473	2.01	0.045	0.006996	0.589083		
ed4	0.346371	0.149021	2.32	0.02	0.054255	0.638487		
ed5	0.339735	0.151293	2.25	0.025	0.043165	0.636305		
per_cap_inc	0.000011	5.60E-006	1.96	0.05	2.25E-009	0.000022		

Source and notes: CEPR analysis of American Community Survey, 2010–2014.

**TABLE 7**

**Impact of Allowing Foreign Trained Physicians Practice in United States — 2025**

(2014 dollars)

Percent Increase in Flow of New Residents	Cumulative Increase After Ten Years	Percentage Increase in Supply of Physicians
50%	65,000	7.6%
100%	130,000	15.1%
150%	195,000	22.7%

Source and notes: Education Commission for Foreign Medical Graduates (2015), Dill, Michael J. and Edward S. Salsberg (2008), and author's calculations, see text.

**TABLE 8****Comparative Prices of Medical Procedures — 2012**

(2012 dollars)

	United States	Argentina	Spain	United Kingdom
Hip Replacement	\$40,364	\$3,565	\$7,731	\$11,889
Knee Replacement	\$25,637	\$3,192	\$7,827	\$7,833
Heart Bypass Surgery	\$73,420	\$8,882	\$17,437	\$14,117
Angioplasty	\$28,182	\$2,851	\$9,446	\$14,366

Source and notes: International Federation of Health Plans (2012).

**TABLE 9****Potential Savings from Using Foreign Medical Procedures**

(2010 dollars)

	Number (2010)	Total Spending (millions)	Savings per Procedure	Total Savings (millions)
Hip Replacement	332,000	\$13,401	\$21,799	\$7,237
Knee Replacement	719,000	\$18,433	\$7,445	\$5,353
Heart Bypass Surgery	395,000	\$29,001	\$49,538	\$19,568
Angioplasty	500,000	\$14,091	\$10,331	\$5,166
<b>Total</b>		<b>\$74,926</b>		<b>\$37,323</b>

Source and notes: Centers for Disease Control and Prevention (2016).

**TABLE 10****Shares of Over 65 Population and Over 65 Share of Totals**

(percent)

	2014	2035
Foreign Born Share	13.2	18.6
Over 65 share of total population	13	20.7
Over 65 share of health care spending	33.9	47.2

Source and notes: Census Bureau (2015), Center for Medicare and Medicaid Services (2015), and Social Security Administration (2016), see text.

**TABLE 11****Current Expenditure on Health, Per Capita**

(US\$ Purchasing Power Parities)

	<b>Overall 2013</b>	<b>Over 65 2013</b>	<b>Over 65 2035</b>	<b>Gap Between Medicare Cost and Cost in Other Countries</b>	<b>Gap including Medicaid</b>
Australia	\$3,866	\$10,051	\$13,946	\$4,456	\$7,356
Canada	\$4,351	\$11,313	\$15,698	\$2,705	\$5,605
Chile	\$1,606	\$4,175	\$5,793	\$12,610	\$15,510
France	\$4,124	\$10,722	\$14,877	\$3,525	\$6,425
Germany	\$4,819	\$12,529	\$17,385	\$1,018	\$3,918
Greece	\$2,366	\$6,153	\$8,538	\$9,865	\$12,765
Ireland	\$3,663	\$9,524	\$13,215	\$5,188	\$8,088
Israel	\$2,428	\$6,312	\$8,758	\$9,644	\$12,544
Italy	\$3,077	\$7,999	\$11,099	\$7,304	\$10,204
Mexico	\$1,048	\$2,726	\$3,782	\$14,620	\$17,520
Poland	\$1,530	\$3,979	\$5,521	\$12,882	\$15,782
Portugal	\$2,514	\$6,538	\$9,072	\$9,331	\$12,231
Spain	\$2,898	\$7,536	\$10,457	\$7,946	\$10,846
United Kingdom	\$3,235	\$8,410	\$11,669	\$6,733	\$9,633
United States	\$8,713	\$22,655	\$31,435	n.a	n.a
<b>OECD AVERAGE</b>	<b>\$3,453</b>	<b>\$8,977</b>	<b>\$12,456</b>	<b>\$5,947</b>	<b>\$8,847</b>

Source and notes: OECD (2015).

**TABLE 12****Impact on Health Care Spending in 2035 from Varying Rates of Emigration**

(percent)

Over 65 share of health care spending	47.2
Percentage saving from 5 percent emigration	2.4
Percentage saving from 10 percent emigration	4.7
Percentage saving from 20 percent emigration	9.4

Source and notes: Author's calculations, see text.

**TABLE 13****Impact on the Demand for Doctors — 2030**

(percent)

	<b>Low</b>	<b>Middle</b>	<b>High</b>
Changes in Licensing	3	5	10
Immigrant Physicians	7.6	15.1	22.7
Medical Travel	1.5	3.0	5.0
Emigration of Retirees	2.4	4.7	9.4
<b>Total</b>	15	28	47

Source and notes: Author's calculations, see text.

**TABLE 14****Impact on the Demand for Dentists — 2030**

(percent)

	<b>Low</b>	<b>Middle</b>	<b>High</b>
Changes in Licensing Rules	3	5	10
Immigrant Dentists	15.2	30.2	45.4
<b>Total</b>	18	35	55

Source and notes: Author's calculations, see text.

TABLE 15

## Hourly Pay of Lawyers and Paralegals by States

(2014 dollars)

	Lawyers	Paralegals
<b>United States</b>	68.32	26.02
Alabama	52.78	19.58
Alaska	48.10	25.46
Arizona	62.54	24.68
Arkansas	58.85	17.64
California	75.14	30.05
Colorado	66.81	25.65
Connecticut	84.22	30.18
Delaware	64.72	24.63
D.C.	103.33	28.63
Florida	62.97	25.56
Georgia	64.79	26.12
Hawaii	82.22	21.19
Idaho	51.15	21.82
Illinois	71.43	26.77
Indiana	54.19	22.57
Iowa	62.34	21.29
Kansas	53.64	21.77
Kentucky	54.83	25.97
Louisiana	57.11	22.43
Maine	53.08	19.40
Maryland	73.98	31.14
Massachusetts	71.17	27.34
Michigan	56.57	21.34
Minnesota	64.93	23.91
Mississippi	57.12	20.23
Missouri	53.29	22.23
Montana	46.20	18.14
Nebraska	47.15	19.54
Nevada	67.70	25.11
New Hampshire	50.27	23.45
New Jersey	78.74	28.88
New Mexico	61.47	25.05
New York	77.52	29.10
North Carolina	59.08	22.10
North Dakota	53.62	17.34
Ohio	52.86	24.11
Oklahoma	66.29	21.30
Oregon	55.86	22.69
Pennsylvania	62.49	24.66
Rhode Island	54.68	26.56
South Carolina	57.65	20.31
South Dakota	40.70	16.25
Tennessee	72.89	22.99
Texas	66.04	26.24
Utah	57.24	24.13
Vermont	151.72	20.40
Virginia	77.18	30.83
Washington	63.22	24.77
West Virginia	46.51	18.59
Wisconsin	56.05	22.83
Wyoming	45.48	16.90

Source and notes: CEPR analysis of American Community Survey, 2010–2014

**TABLE 16****Average Compensation for Partners by Practice Area**

(2014 dollars)

	<b>2014</b>
Litigation	\$700,000
Corporate	\$893,000
IP	\$855,000
Labor and Employment	\$503,000
Tax/ERISA	\$832,000
Real Estate	\$573,000
Other	\$620,000

Source and notes: Major, Lindsey &amp; Africa (2014), Partner Compensation Survey.

**TABLE 17****Lawyers by Area of Practice**

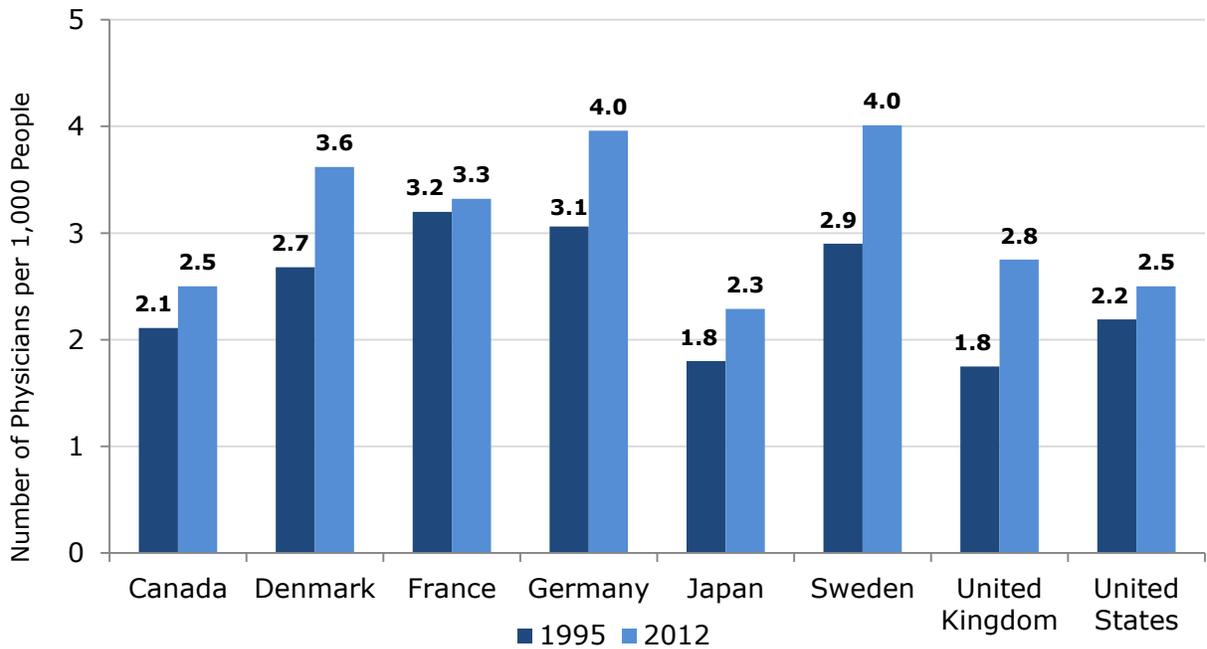
(number of lawyers)

	<b>2010</b>	<b>2012</b>	<b>2014</b>
Litigation	254,259	297,398	343,865
Corporate	252,273	217,004	225,546
IP	142,359	154,744	155,294
Labor and Employment	87,402	84,021	99,216
Tax/ERISA	56,281	70,118	62,857
Real Estate	85,415	64,678	63,473
Other	325,108	357,241	340,168
<b>Total</b>	<b>1,203,097</b>	<b>1,245,205</b>	<b>1,290,419</b>

Source and notes: Major, Lindsey &amp; Africa (2015) and American Bar Association (2013).

**FIGURE 1**

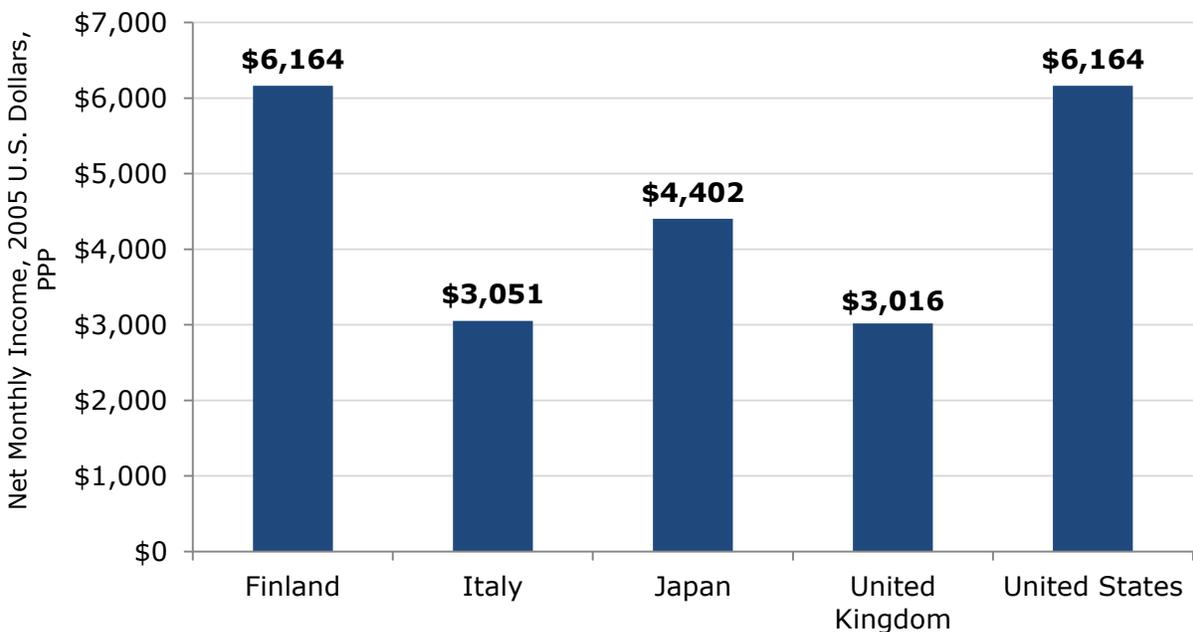
**Physician Density in Select OECD Countries, 1995 and 2012**



Source and notes: OECD (2014). Data for Japan for 1995 is the average of 1994 and 1996 data.

**FIGURE 2**

**Average Net Monthly Income for Dentists, Select Countries**



Source and notes: World Salaries (2016). Underlying data from International Labour Organization.