Geographic Adjustment of Medicare Payments for the Work of Physicians and Other Health Professionals

A report by staff from RTI International for the Medicare Payment Advisory Commission

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Final Report

Prepared for

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Introduction and Background

This paper summarizes arguments for and against the physician work Geographic Practice Cost Index ("work GPCI") used in the Medicare Physician Fee Schedule, and presents empirical analysis of geographic variation in physician earnings from two sources of data. In this introductory section we briefly describe the statutory basis for the work GPCI, how it is currently calculated and used in Medicare physician payments, and the Congressional mandate for the MedPAC report. We close this section with an overview of the rest of the paper.

1.1 Statutory Basis for the Work GPCI

As required by Section 1848 (e) (1) (A) of the Social Security Act, a Geographic Practice Cost Index (GPCI) is applied to each of the three Medicare physician fee schedule components: physician work, practice expense (PE), and malpractice. While the PE GPCI and the malpractice GPCI reflect the full cost of geographic variation, the work GPCI reflects one-quarter of total geographic differences among payment localities. The GPCIs are budget neutral, so if the GPCI increases in one Medicare payment locality it must decrease in another. The GPCIs are intended to adjust for the cost of physician practice in different geographic areas. The GPCIs were first implemented in 1992 and have since been updated every three years.

The current work GPCI is designed to "reflect the relative cost of physician labor by Medicare [Physician Fee Schedule] locality" (CMS 2011). Using the relative median wages of a group professional specialty occupations (more detail below), a work GPCI is constructed for each of the 89 Medicare payment localities. Physician median wages are excluded from the construction of the work GPCI so that the geographic adjustment is independent of physician payment patterns.

1.2 Current Calculation of the Work GPCI

The current 2012 Work GPCI (6th update) was developed by Acumen, LLC under contract to CMS. While previous physician work GPCIs were constructed using 2000 Census data (versions updated in CY 2001, 2003, 2005, and 2008), the current version is constructed using U.S. Bureau of Labor Statistics (BLS) Occupational Employment Statistics (OES) data (2006–2008).

The relative median hourly earnings of the following seven occupational categories are used to construct the work GPCI index for each Medicare payment locality:

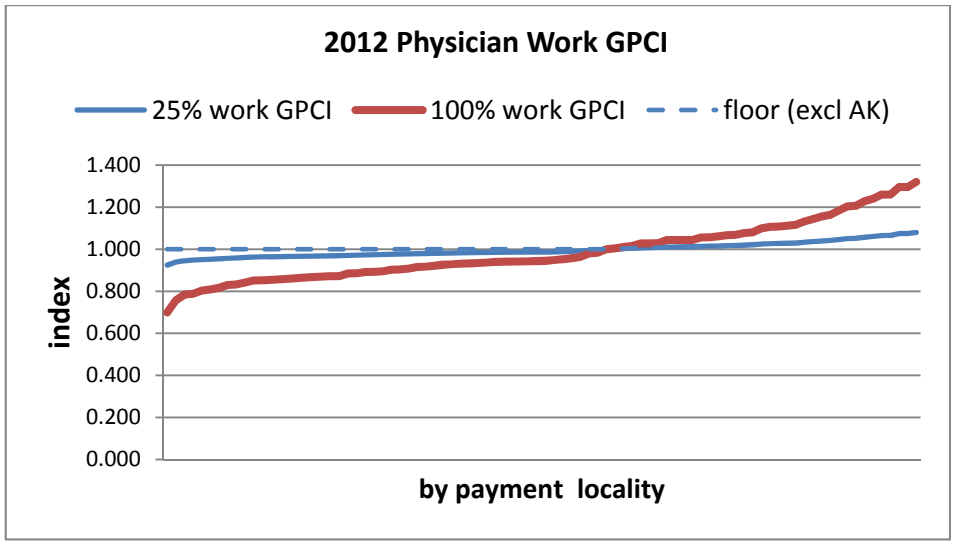
- architecture and engineering;
- computer, mathematical, and natural sciences;
- social science, community and social service, and legal;

- education, training, and library;
- registered nurses;
- pharmacists; and
- writers, editors and artists.

Acumen chose these occupations because they represented "highly educated professional employee categories" whose professionals would likely share the same preferences as physicians in terms of amenities. Additionally, a wide range of occupations was chosen in the event that a particular occupation was under-represented in a specific geographic locality (O'Brien-Strain, et al., 2010).

As required by Section 1848 (e) (1) (A) of the Social Security Act, "the work GPCIs reflect only one-quarter of the relative cost differences compared to the national average" (CMS, 2011). As shown in ***Exhibit 1-1***, this is a considerable reduction in absolute effect. In 2012 the full adjustment would have ranged from a maximum 24% percent reduction to a maximum 32% increase, where the partial adjustment could have ranged only form a 7.5% reduction to an 8% increase (***Exhibit 1-1***). The 1.00 floor affects 51 out of 88 GPCI payment areas (excluding the area for Guam and Marianna Islands).

Exhibit 1-1: Work GPCI as computed for CY 2012 physician payment rules



Source: RTI analysis of CMS 2012 Physician Payment Rule files. Graph does not show 1.5 floor for Alaska.

1.3 Role of the Work GPCI in Medicare Physician Fee Schedule Payments

A combination of Relative Value Units (RVUs) and GPCIs are used to determine Medicare physician payments. RVUs measure the relative level of effort required to deliver a specific medical service, and unlike the GPCIs (described above) they do not vary geographically. The following formula is used to calculate Medicare Physician Payments:

Payment = [(RVU work × GPCI work) + (RVU PE × GPCI PE) + (RVU malpractice × GPCI malpractice)] × CF,

where "CF" is a dollar conversion factor.

1.4 Work GPCI Floor

Under the Medicare Modernization Act of 2003, a work GPCI floor of 1.00 was established in order to limit the geographic adjustment in low-GPCI areas. If an area has a GPCI value below 1.00, then the GPCI of this area is set to the national average of 1.00. Through December 31, 2011 Congress had consecutively extended this floor. The floor was extended through February 29, 2012 under the Temporary Payroll Tax Cut Continuation Act of 2011 (Pub. L. 112-78) and was again extended again under the Middle Class Tax Relief and Job Creation Act of 2012. The current work GPCI floor is set to expire on December 31, 2012.

A permanent 1.50 work GPCI floor in Alaska was established under the Medicare Improvements for Patients and Providers Act of 2008. The floor in Alaska will continue into CY 2013.

1.5 Congressional Mandate for the MedPAC Report

The Middle Class Tax Relief and Job Creation Act of 2012 mandates that a Medicare Payment Advisory Commission (MedPAC) report be written on the current work GPCI. The report must address "whether any adjustment under section 1848 of the Social Security Act (42 U.S.C. 1395w-4) to distinguish the difference in work effort by geographic area is appropriate and, if so, what that level should be and where it should be applied. The report shall also assess the impact of the work geographic adjustment under such section, including the extent to which the floor on such adjustment impacts access to care" (H.R. 3630: Middle Class Tax Relief and Job Creation Act of 2012).

1.6 Overview of this Paper

This paper provides both conceptual arguments and empirical evidence concerning geographic variations in physician earnings. Section 2 of the paper summarizes conceptual arguments for and against a geographic adjustment to physician work, drawing on economic theory and stakeholder arguments. Section 3 is an empirical analysis of two sources of physician earnings data, the BLS OES data and the Medical Group Management Association (MGMA) physician practice survey data. We begin Section 3 by reviewing two previous studies of physician earnings, then describing the two physician earnings data sources and the ACCRA cost of living index, followed by a discussion of the methods, results, and

conclusions of the empirical analysis. The empirical analysis includes investigation of geographic variation in physician earnings and, in the BLS data, correlation of geographic variation in physician earnings with geographic variation in the earnings of reference professional occupations used in Medicare's 2012 work GPCI.

2

Conceptual Arguments For and Against a Geographic Adjustment

Section 2 begins by presenting the general economic theory of geographic wage differences. In Section 2.2 we discuss factors specific to the physician labor market. Section 2.3 presents the arguments the developers of the work GPCI used to justify it. Sections 2.4 and 2.5 give the arguments for and against the work GPCI. Section 2.6 discusses the pros and cons of a partial work GPCI, such as the one-quarter work GPCI currently used in Medicare physician payment.

2.1 Theory of Geographic Wage Differences[1]

The hourly wages of workers located in high-cost metropolitan areas can be as much as twice as high as wages for similar workers located in low-cost metropolitan areas. In 2000, for example, the average hourly wage of high school graduates in San Jose, California was $19.70 while in McAllen, Texas it was $10.65 (Moretti, 2011). Geographic differences in hourly wages for college graduates are just as large as for high school graduates.

Recent developments in labor market theory and urban economics help explain why such large differences occur and how the differences might persist for years and, in some cases, decades. Differences in local labor productivity are partly responsible for the observed differences in nominal wages. In this section, we summarize the effects of local demand and supply for labor on different types of labor. In particular, we are interested in the spillover effects of increased demand for one type of occupation upon the wages of workers in other occupations (and industries) within the same local labor market. These spillover effects help explain why wages in the other occupations and industries are higher in some markets than in other markets.

The theory of compensating wage differentials was originally used to explain why nominal wages – the wages that appear on paychecks –differ across workers. The term "compensating" refers to attributes of jobs that attract or repel workers to specific occupations or geographic areas. A job that has repellent attributes commands a "compensating" amount. Conversely, holding constant other attributes, nominal wages can be lower for jobs that have attractive attributes. The theory of geographic wage differences, then, is the theory of compensating wage differentials applied to the geographic dimensions of wages.

Factors that can affect workers' location choices include the nominal wage, the cost of housing (often equated with the cost of living), and local amenities (e.g., symphony orchestra, museums, and old-fashioned coffee houses). All three of these factors are conceptually measured at the local level. An additional factor that can affect location choice is a worker's idiosyncratic preferences for specific cities.

[1] This section draws heavily on Moretti (2011, 2012) and Glaeser (2011).

Idiosyncratic preferences might include items like family presence, weather, and community culture. Idiosyncratic factors can make a specific city attractive to a given worker even though the real wage (nominal wage divided by cost of housing) and amenities are lower in the city than in other cities. The cost of living, amenities, and idiosyncratic preferences can be considered compensating differentials.

Geographic variation in wages is affected by the amenities available in different areas. "Amenities" include such factors as climate and local cultural and recreational opportunities. High-amenity areas do not need to pay as much to attract workers, hence wages in these areas will be lower relative to their cost-of-living than in areas with low levels of amenities. The reverse is also true; workers may also demand higher real (i.e. cost-of-living-adjusted) wages for a job located in an area with unattractive features. The valuation of amenities will differ across individuals, partly related to systematic factors such as education and income, and partly due to idiosyncratic preferences. It may also vary across professions; for example, if physicians value location in an area with access to colleagues and multiple medical facilities, then they might demand a wage premium for locating in isolated rural communities.

Firms competing in tradable markets[2] can remain in areas with high (or rising) nominal wages if these wages are accompanied by high (or increasing) productivity. Evidence suggests this is what is occurring in high-wage metropolitan areas such as Silicon Valley and New York City. The source of high productivity has been ascribed to economies of agglomeration.[3] Economies of agglomeration make otherwise similar workers more productive in such metropolitan areas. Evidence also suggests that economies of agglomeration are concentrated in few industries within a given metropolitan area. For places like the Silicon Valley, agglomeration economies have persisted for more than a decade. How long agglomeration economies will persist such that they continue to give a competitive edge to firms in Silicon Valley and engaging in the tradable sector is not known.[4] Just as Detroit is no longer a high-wage city, the San Francisco Bay metropolitan areas might someday no longer be a high-wage area.

As more workers take jobs in high-wage industries in a given area, they tend to bid up the price of housing. This increases the cost of living and lowers the real wages of workers in other industries within the area. Firms (and their workers) in some of these other industries that are involved in the production of tradable goods are able to leave the area, but some workers need to remain to provide goods and services to the remaining residents of the community. In particular, the goods and services produced by school teachers, plumbers, barbers, physicians, firemen, and the host of workers in other occupations are still demanded by workers in the high-wage industries.

In industries that provide locally-traded goods and services, some “spillover” effect of the productivity-driven wage increases in the tradable sector can be expected, because the wages of workers in the locally-traded sector will need to be augmented for increased cost of living. Otherwise such

[2] Goods and services produced by firms in tradable markets are mainly sold to customers located in other geographic areas (e.g., automobiles or computers). To remain competitive, firms producing tradable goods and services can’t pay nominal wages higher than wages paid by competitors located in other geographic areas.

[3] Types of economies of agglomeration and evidence for them are discussed in Quigley (1998) and Rosenthal and Strange (2001, 2004) as well as Moretti (2011).

[4] The loss of industries in older industrial cities in the U.S. and Europe can be ascribed, in part, to increased global competition and the loss of economies of agglomeration (e.g., transportation economies from rivers). The importance of education as a source of economies of agglomeration is discussed by Moretti (2012) and Glaeser (2011).

workers will move to other geographic areas. This, then, accounts for why plumbers in San Jose, California ($36.41 per hour) make more money than plumbers in Little Rock, Arkansas ($20.84 per hour) even though the type of work plumbers perform in both cities is the same.

If physician labor markets are similar to the labor markets of other occupations in non-tradable industry sectors, this theory predicts that higher nominal wages, than otherwise would be necessary, would also be needed to attract physicians to high-cost areas. It is not necessary that physicians' real (cost-of-living-adjusted) wages be equal across geographic areas, but rather that the real wages, amenities and idiosyncratic preferences are balanced so that the marginal physician is indifferent to the geographic area in which he or she locates. In the next sections we address factors that are specific to physician labor markets that might create exceptions to this expected wage outcome.

2.2 Physician-Specific Labor Market Factors

While the previous section gives the general theory of inter-area wage differences, in this section we mention a few factors specific to the market for physician services that may affect inter-area differences in physician earnings. One somewhat unusual, although not unique, feature of physicians is that many physicians are self-employed. The earnings of the self-employed reflect an entrepreneurial return, or profit, in addition to an "opportunity wage"[5] that is more likely to reflect inter-area compensating differences in cost of living and amenities. The earnings of employed physicians should better reflect the "opportunity wage," although employed physicians may differ from the general population of physicians.

Another factor that can affect local physician earnings is competition among physicians for business. For example, physicians may have a strong bargaining position vis-a-vis insurers in some geographic areas because there are few alternative physicians for insurers to contract with to provide access to medical care for their enrollees in that area. This market power may allow physicians in these areas to earn higher payments from third-party payers. The physician market is unusual in the degree of income arising from third-party payment (insurance). Thus, the generosity of insurer payments to physicians may be an important determinant of physician earnings in an area. Insurer payment policies could be affected by several factors, including competition in the insurance market and employer pressure on insurers to contain costs.

Another factor in local areas that can affect physician earning potential is the availability of complementary or substitutable factors of the production of medical services, including specialists, hospitals and other institutional suppliers, and medical technology (e.g., imaging centers). The availability of more of these other providers may increase physicians' ability to provide and bill for more services. If these services are unavailable outside the practice and are therefore provided through the physician's practice, physician earning power is also enhanced.

[5] The opportunity wage is the amount a physician (or business owner) would have earned had they been employees of another organization.

2.3 Original GPCI Rationale and Development

The original rationale for the work GPCI (Pope, Welch, & Zuckerman, 1989) followed the theory of compensating wage differentials as discussed in Section 2.1. To induce physicians to practice in an area, the monetary return to physicians, in terms of earnings net of practice expenses, would have to compensate for the area cost of living adjusted for area amenities. The goal is for the "real" (cost of living- and amenity-adjusted) compensation of physicians to be equal across areas. This is both equitable to physicians and necessary for beneficiary access to services. Leaving aside amenities, the idea is that the purchasing power of payment should be the same across areas. The developers of the GPCI argued that wage rates could be used to measure the necessary relative compensation in different geographic areas.

Physician wage rates, however, suffered from several fundamental problems for use in the work GPCI. First, physician earnings are influenced by rates paid by insurers for their services in an area. It is "circular" logic to base physician payments on the existing pattern of physician earnings across areas. Second, many physicians are self-employed. The net earnings of employed physicians include an entrepreneurial return, or profit, in addition to the imputed "employed wage" that would more appropriately measure the required geographic variation in compensation.

To avoid the shortcomings of physician earnings, the GPCI developers argued that the hourly earnings of non-physician highly-educated professionals should be used in the GPCI. The preferences for amenities and local cost of living of other highly-educated professionals were thought to be similar to those of physicians. Operationally, the GPCI developers chose non-physician components of the Census-defined "professional specialty occupations," which included occupations such as lawyers, dentists, teachers, nurses and engineers. A weighted average of the median hourly earnings of this group was used, because median earnings are more stable than mean earnings, especially in areas with small sample sizes, and the median is less influenced by the extremes of the wage distribution (e.g., corporate lawyers in New York City) than the mean.

2.4 Arguments in Favor of a Work Adjustment

This section reviews the arguments in favor of a work GPCI adjustment to Medicare Physician Fee Schedule payments. This section, and the following one (arguments against the work GPCI), rely on the policy history of the work GPCI and stakeholder and expert arguments. The recent reports of the Institute of Medicine Committee on Geographic Adjustment Factors in Medicare Payment (IOM, 2012; IOM, 2011), which in part reflect testimony of stakeholders, was a major source for this section. Although we comment on several of the arguments, our primary purpose in this section is to state the arguments and not to evaluate their validity.

2.4.1 Compensation for Cost of Living

A fundamental argument for a work GPCI adjustment is that the cost of living varies across areas, and needs to be reflected in the earnings of physicians, and hence the payment rates for physicians in different areas. As discussed in Section 2.1, the cost of living in an area may be modified by its perceived amenities, that is, physicians may be willing to locate in a high cost of living area with lower

compensation if the area has attractive amenities (Pope, Welch, & Zuckerman, 1989 & Zuckerman & Maxwell, 2004).

2.4.2 Beneficiary Access to Services in High-Cost Areas

If physician payment rates do not reflect local cost of living and amenities, ultimately, this argument goes, physicians will not locate in high cost of living areas in sufficient numbers, and beneficiary access to physician services in those areas will suffer (Pope, Welch, & Zuckerman, 1989). The concern is that Medicare physician payment rates need to be competitive with those of other insurers—which may tend to be higher in high wage/cost of living areas—or else physicians may refuse to treat Medicare beneficiaries in these areas. This will require higher physician payment rates in high wage/cost of living areas.

2.4.3 Physician Work is an Input to the Production of Physician Services

In this perspective, physician work is viewed as one of several inputs to the production of physician services, along with non-physician practice employees, office space, medical equipment, etc. When viewed as "just another input," the physician work component to the production of physician services should be geographically adjusted, just like other inputs. The wages of non-physician practice employees are geographically adjusted in the practice expense GPCI. Because physician work is just another input to production, and not inherently different, its costs should similarly be geographically adjusted.

2.4.4 Consistency with Medicare Hospital Geographic Payment Adjustment

This argument notes that the labor component of Medicare hospital payments is fully geographically adjusted through the Medicare area hospital wage index. By analogy, Medicare physician payments should be similarly geographically adjusted. If hospital payments are geographically adjusted but physician payments are not, hospital and physician payments could become uncoordinated and inconsistent. This may be particularly undesirable when Medicare is promoting new coordinated and integrated provider organizations and forms of care, such as Accountable Care Organizations.

2.5 Arguments Against Any Work Adjustment

This section reviews arguments that have been put forward against a physician work adjustment.

2.5.1 Work is Work/Equity

One argument that has been put forth against the work GPCI is that "work is work" (Kitchell, 2011). The idea is that physician work is the same in all areas, so why should it be paid for differently across areas? Essentially this is an equity argument, that work is the same everywhere, so it should be paid at the same rate everywhere.

This argument appears to ignore the fact that other types of work—for example, that of nurses—is the same everywhere, yet Medicare hospital and physician payments are adjusted for geographic variations in non-physician labor wage rates. This argument also appears to ignore the fact that the physician work RVUs are the same everywhere. That is, it can be argued that the physician work RVUs

and physician work GPCI measure different things. The work RVUs measure the amount of work involved in performing a particular service, which is the same everywhere. The work GPCI measures the physician work component of the cost of practice, which is—arguably—not the same everywhere.

2.5.2 National Physician Labor Market

A second argument against the work GPCI is that physician practices compete for physician labor in a national market (Marshfield Clinic, 2002). For example, practices in rural areas with lower work GPCIs assert that they compete against urban practices, and practices in different regions compete with each other to hire physicians. Therefore, this argument goes, payment rates should be uniform everywhere. There is an analogy to the medical supplies and equipment portion of the practice expense GPCI. The developers of the GPCI argued that these practice inputs were purchased in a national market, hence no geographic adjustment for them was needed.

A counterargument here is that even if the physician labor market is national, physician salaries or earnings do not necessarily have to be equal across areas. Indeed, in the theory of compensating wage differentials, it is precisely the mobility of labor across areas that causes the market supply and demand of labor to equilibrate at wage rates that result in equal "real" (cost of living and amenity-adjusted) compensation across areas. Also, even if both are purchased in national markets, physician labor is different than medical supplies and equipment in that physicians have a choice about moving across areas and care about the purchasing power of their incomes and local amenities.

2.5.3 Have to Pay More to Get Physicians to Locate in Rural Areas

Some representatives of rural practices claim that they have to pay more to hire physicians to locate in rural areas (Grassley, 2011). Reasons include the extra demands or costs of rural practice, such as greater on-call time and travel (Kitchell, 2011). Some argue that physicians may especially prefer to locate in metropolitan areas, even more so than other occupations, because of the availability of complementary factors of production (e.g., colleagues, specialists, institutional providers, medical technology, teaching hospitals, and research opportunities), preference for the amenities available in urban areas, and the availability of jobs for spouses. For these reasons, the argument goes, despite the lower cost of living in rural areas, physicians have to be paid more to locate there.

It could be questioned whether some of the characteristics of rural practice, even if real, are appropriately adjusted for through the work GPCI as opposed to the work RVUs (on call time), or practice expense GPCI (travel). Also, the reason why some of the factors affecting choice of urban or rural location (e.g., availability of jobs for spouses) differentially affect physicians as opposed to other occupations needs explanation.

2.5.4 Certain Other Government Programs Do Not Geographically Adjust Payments/Costs

Some proponents of no geographic work adjustment point to the fact that not all government payments or standards are geographically adjusted. For example, Social Security payments are not geographically adjusted, nor is the federal poverty level geographically adjusted (although the Department of Labor has conducted research on doing so).

On the other hand, other government payments are geographically adjusted. Payments to hospitals and other Medicare payments are adjusted by the area hospital wage index. Some wages paid to federal government employees are geographically adjusted.

2.5.5 Data for the Reference Professional Occupation Group are Inadequate

Some argue that the wage data for the "reference" non-physician occupations that are currently used to calculate the work GPCI are inadequate as approximations of physician wages. The physician labor market may be different, and geographic variation in the reference group wages may not accurately capture expected geographic variation in physician wages. If accurate data on physician earnings are not available, and the reference data are inadequate, it may be better to have no work GPCI.

2.5.6 Physician Salaries Do Not Vary By Urban-Rural Areas on Average

As discussed elsewhere in this paper, the available empirical evidence does not support the existence of an urban-rural physician earnings difference (Reschovsky & Staiti, 2005). This contrasts with the current work GPCI urban-rural difference in payment, which is based on the urban-rural difference in the earnings of non-physician occupations. One reaction to these apparent facts is that the current urban-rural work GPCI adjustment is unwarranted.

However, one must be cautious in interpreting the physician earnings data because it is highly imperfect, as discussed elsewhere in this paper. Also, absence of observed urban-rural physician wage differentials appears to conflict with both theory and the earnings patterns of other occupations. Finally, for the conceptual reasons discussed above in Section 2.3, it is not clear that actual physician earnings are the "gold" standard for the work GPCI. For example, greater market power of rural physicians in negotiating with insurers would raise physician earnings in rural areas, but it might not be necessary or appropriate for Medicare to pay higher prices due to provider market power.

2.6 Arguments For and Against a Partial Work Adjustment

The current payment work GPCI (ignoring any floors) adjusts for one-quarter of the variation in the full work GPCI. That is, the payment work GPCI reflects one-quarter of the geographic variation in the earnings of the occupations making up the work GPCI. Thus, it is relevant to identify arguments for and against a partial work adjustment.

One argument for a partial work GPCI is one of caution or prudence. Given the limitations in available data, and conceptual uncertainties, it may be prudent to reflect some, but not all, of the variation in wages. For example, if the BLS wage data contains a considerable amount of random "noise," it may make sense to "shrink" the work GPCI estimates towards the national mean, i.e., towards 1.0, which is the effect of the quarter work GPCI. This will minimize "outlier" GPCI values that primarily reflect random fluctuations in the data. Another argument for a partial adjustment could be that the earnings of the reference occupations are likely to partially, but not completely, correlate with physician earnings. Thus, only part of the variation in reference occupation wages should be reflected in the work GPCI.

The main argument against a partial work GPCI is that if the arguments for a full work or no work GPCI are convincing, they would imply a 100% work adjustment or a zero work adjustment, respectively, not a partial adjustment.

3

Empirical Analysis of Geographic Variation in Physician Compensation

Section 3 presents the analysis of empirical data on geographic variation in physician earnings. The empirical analyses have several objectives. One is to explore existing data on geographic variation in physician income and in incomes for other occupations, and consider how well these data conform to expectations based on the concepts described in Section 2. Another is to document the geographic variation in the set of occupations currently identified for the "reference" professional index that is used by CMS as the basis for the physician work adjustment. Finally, a specific objective of this work is to follow up on a recommendation of the IOM consensus committee on geographic adjustment in Medicare payments.

Before proceeding with the analyses, we start with a brief review of two relevant prior studies that will help to place our findings in context. The first of these describes a separate smaller survey on physician incomes and focuses on observed rural-urban differentials. The second study used American Medical Association (AMA) income data and regression analysis to test the validity of the work GPCI, specifically the validity of the reference professional wages as a substitute for physician wages. The second study – like the IOM recommendation – equates validity with predictive ability. It is premised on an assumption that variation in the reference professional wages is intended to approximate variation in the physician income. We briefly review them here to provide context for the empirical work.

3.1 Review of Previous Studies

1) *Physician Incomes in Rural and Urban America.* James D. Reschovsky and Andrea B. Staiti. *Center for Studying Health System Change.* 2005.

Using the "2000–2001 HSC Community Tracking Study Physician Survey," Reschovsky and Staiti do not find a significant difference between average physician incomes in rural and urban areas. The sample used for this analysis includes roughly 12,000 physicians (11,277 urban, 790 rural adjacent to metro-areas, 339 rural in nonadjacent areas) drawn from the AMA and the American Osteopathic Association master files. The survey had a response rate of 59%.

Average annual incomes of physicians in urban areas were found to be lower than average annual incomes of physicians in rural areas, although the differences were not statistically significant. Using the ACCRA cost of living index (discussed in further detail in section 3.3.3), to control for the cost of living, the authors found that rural average wages were lower and that rural physicians had 13% more purchasing power than urban physicians. This result was statistically significant at the 90% confidence level.

Because there is a higher percentage of primary care physicians in rural areas compared to urban areas (54% and 38% respectively), specialty mix skews rural annual physician wages downward relative

to urban physicians. When Reschovsky and Staiti looked at average annual incomes of primary care physicians (PCPs) only, they found that rural primary care physicians had higher average annual incomes then urban primary care physicians before adjusting for cost of living. This result was not statistically significant. When they adjusted the data for cost of living, however, PCP incomes were 30% higher in rural areas than in urban areas. This result was significant at the 95% confidence level.

These results did not change substantively when the authors adjusted for physician work effort (hours spent working), physician characteristics (specialty and years in practice), and source of payment. Their study also explored the difference between rural counties adjacent to metropolitan areas and rural counties that are non-adjacent to metropolitan areas. Rural physicians that were in non-adjacent counties had higher nominal (unadjusted for the cost of living) incomes and higher real (cost of living adjusted) incomes, than rural physicians in adjacent counties. This suggests a strong "reverse" amenities effect – i.e. that physicians may demand (and receive) a premium over and above the cost-of-living adjusted wage, to entice them to practice in rural areas.

2) *Assessing the Validity of the Geographic Cost Indexes*. Kurt D. Gillis, Richard J. Willke, and Roger A. Reynolds. *Inquiry*. 1993.

Gillis, Willke, and Reynolds evaluate the validity of the physician work GPCI. The authors first determined whether physician hourly wage differs geographically, and then evaluated whether these geographic differences are captured better by the full work GPCI or one-quarter work GPCI. The physician hourly wage is calculated using self-reported physician hours worked and net income before taxes from the AMA SMS survey.

The physician hourly wage is found to vary geographically after controlling for physician experience, board certification, physician specialty and other demographic characteristics ($p<.001$). The authors then test the relationship between physician hourly wage and the physician work GPCI. In the "double log" model they estimated, the coefficient of the log of the work GPCI represents the elasticity of the physician hourly wage with respect to the work GPCI. If the work GPCI fully captures geographic differences in physician wages, then the estimated coefficient should be equal to 1. Using both the full work GPCI and the one-quarter work GPCI the authors calculated the elasticity of the physician hourly wage with respect to the work GPCI using different sets of control variables. The authors found that the elasticity of the one-quarter work GPCI using the model that controlled for physician experience, board certification, physician specialty and demographic characteristics was not significantly different from 1.00 at the 5% confidence level. Physician hourly wage differences were captured best by the one-quarter work GPCI—better than by the full work GPCI or by no work GPCI—using the set of control variables just described.

The authors then adjusted the physician hourly wages by the work GPCIs, to test differences between urban and rural adjusted physician hourly earnings. Using the work GPCI adjusted hourly wage allowed the authors to look at "the fit of the work GPCI to input prices across localities." When rural and urban dummy variables were introduced into the model the authors estimated that earnings were approximately 11% higher in rural areas using the full work GPCI, but not significantly different using the one-quarter work GPCI. However, when the authors decomposed rural into small rural and large rural

areas, the authors found that the quarter-work adjusted physician hourly wages were roughly 14% lower in small rural areas.

3.2 Objectives of the Current Empirical Study

In the second edition of their Phase I report, the IOM Committee on geographic adjustment in Medicare payments recommended further statistical analysis to identify the most appropriate substitute index for use as the work GPCI (IOM, 2011). Their stated objective was to provide better empirical support for (a) the choice of occupations in reference index that CMS now uses for the work GPCI, and (b) the choice of 25% for the partial work adjustment that is now applied in the implementation of the work GPCI. Specifically, they recommended regressing physician relative wages against indexes constructed from component occupations to identify those with the best correlation; using these results both to choose the substitute occupations and to develop new weights when combining them into a new reference index; and finally, setting the partial work adjuster based on the coefficient estimated from a linear regression of physician relative wages on the final revised reference index. The IOM report did not define the type of physician wages that should be used in this analysis nor identify a source for geographic data to be used to construct the physician wage indexes to serve as the dependent variables in these statistical models.

In this section of our report, we undertake analyses to meet some of these recommendations. We replicate CMS' methods to construct an updated work GPCI reference index; we analyze the BLS data on substitute occupations and construct two other non-physician wage indexes to be considered as potential alternatives to the reference index; we identify sources for physician wages and construct possible dependent variables for the regressions; and we test the correlation between the physician indexes and each of the alternative occupation indexes, as simple correlations and through regression models.

For purposes of capturing geographic variation, all of the available sources for physician wage data are flawed. The BLS data are the most comprehensive in terms of geographic coverage and generalizability, but even these data are sparse at the level of individual specialties in smaller urban areas. They are also severely limited by having censored responses in the upper income levels, and they do not include benefits. Other surveys (such as those fielded by MGMA and the AMA and the American Osteopathic Association master files) do not have a systematic sampling frame and are often oriented toward identifying cross-specialty differences in income rather than geographic variation within specialty. None of the privately fielded surveys are large enough to capture local area differences, and only a few of them have sufficient sample size to capture state-level variation.

In addition to the problem of sample size and geographic coverage, there are definitional issues with physician income. One is the how to separate market wage from entrepreneurial returns (practice profits). Another (related to the first), is how to separate variation in *wages* from variation in *effort*. In particular, to the extent that physician contracts include productivity bonuses and incentives, reported wages even for employed physicians will also reflect differences in total patients seen or relative value units (RVUs) billed, which is not the same as differences in market wage per hour worked. Finally, a large part of the compensation for physicians (and other highly paid professionals) is in the benefit

packages. Measuring the value of certain types of benefits (particularly retirement contributions) is not straightforward. Some surveys include benefits, but most notably, the BLS-OES does not.

When capturing geographic differences in physician income there is also the considerable problem of how to control for geographic variation in specialty distribution. Differences in income across specialties are well documented, with procedure-based specialties receiving much higher compensation than visit-based specialties, and these differences are present even when the data are standardized to reflect compensation per RVU. Procedure-based specialties (e.g. surgery or interventional radiology) are concentrated in larger urban areas, thus local data on average physician income will reflect both differences in individual physician compensation and differences in the mix of specialties. To avoid bias from differences in specialty mix, the type of analyses recommended by the IOM report must be conducted on single-specialty wage indexes. But if geographic variation in family practitioner income is significantly different from variation in surgeons' income (a plausible contention), how do we account for this when considering the data for purposes of evaluating the work GPCI?

The ideal measure for physician income would be a source without an upper bound, that includes salaries and benefits, excludes practice profit distributions, and has been standardized for level of effort. This is very similar to what the MGMA attempts to compute in its measure of non-partner compensation per RVU. With a well-designed sampling frame and adequate response rates, the MGMA compensation survey would be ideal for the types of analyses recommended by the IOM committee. As we discuss later, however, for most specialties the MGMA survey is not large enough to support geographic estimates below a state or regional level, and the small number of responding practices even makes generalization to rural and urban regions problematic. Response rates for information on both income and RVUs billed appear low.

It is important to acknowledge that at this time, it may not be possible to find good physician income data. Our premise for the empirical work in the following sections, however, is to use what we have, and try to take the limitations of the data into account when interpreting the findings.

Section 3.3 provides technical detail on three data sources utilized for our analyses, which are the BLS Occupation and Employment Survey (OES), the Medical Group Management Association (MGMA) physician compensation survey, and the ACCRA cost of living index. Due to data limitations, most of our analyses are performed on the BLS data, and these are presented in Section 3.4. Information and analyses on the MGMA data are in Section 3.5, and our conclusions on the limitations of the data and brief comments on our findings appear in Section 3.6.

3.3 Data Sources

3.3.1 BLS Occupational Employment Statistics (OES) Survey

Our source for the following summary of the BLS OES data is "Survey Methods and Reliability Statement for the May 2011 Occupational Employment Statistics Survey," which is available at http://www.bls.gov/oes/current/methods_statement.pdf. Because it is important to understand exactly what the OES measures, we quote at length below from this source for aspects of OES methodology that are critical to understand its measurement of physician wages. The portions of the below in quotation

marks are reported verbatim to capture the precise BLS wording. For more details on OES methodology, the reader is referred to the web link given.

Overview

"The OES survey is primarily a mail survey measuring occupational employment and wage rates for wage and salary workers in nonfarm establishments nationally, and in the 50 states and the District of Columbia, Guam, Puerto Rico, and the Virgin Islands. About 6.7 million in-scope establishments are stratified within their respective states by substate area, industry, and ownership. Substate areas include all officially defined metropolitan areas and one or more nonmetropolitan areas. The North American Industry Classification System (NAICS) is used to stratify establishments by industry. Probability sample panels of about 200,000 establishments are selected semiannually. Most responses are obtained through mail with the remaining responses collected by telephone, e-mail or other electronic means, or personal visit. Respondents report their number of employees by occupation across 12 wage ranges. The Standard Occupational Classification (SOC) system is used to define occupations.

Estimates of occupational employment and occupational wage rates are based on six panels of survey data collected over a 3-year cycle. The final in-scope post-collection sample size when six panels are combined is approximately 1.2 million establishments. Total 6-panel un-weighted employment covers approximately 78 million of the total employment of 125 million."

Sampling Frame

"The sampling frame, or universe, is a list of about 6.7 million in-scope nonfarm establishments that file unemployment insurance (UI) reports to the state workforce agencies. Employers are required by law to file these reports to the state where each establishment is located. Every quarter, BLS creates a national sampling frame by combining the administrative lists of unemployment insurance reports from all of the states into a single database called the Quarterly Census of Employment and Wages (QCEW)."

Survey Response Rate and Imputation of Missing Data

"Of the approximately 1.2 million establishments in the combined initial sample, 1,110,296 were viable establishments (that is, establishments that are not outside the scope or out of business). Of the viable establishments, 858,474 responded and 251,822 did not—a 77.3 percent response rate. The response rate in terms of weighted sample employment is 73.3 percent. To partially compensate for nonresponse, the missing data for each nonrespondent are imputed using plausible data from responding units with similar characteristics."

Available Data Elements

"[BLS publishes OES data as] cross-industry data for the United States as a whole, for individual U.S. states, and for metropolitan and nonmetropolitan areas, along with U.S. industry-specific estimates by 2-, 3-, 4- and some 5-digit NAICS levels. Available data elements include estimates of employment, hourly and annual mean wages, and hourly and annual percentile wages by occupation, as well as relative standard errors (RSEs) for the employment and mean wages estimates."

Definition of Employment

"Employment refers to the number of workers who can be classified as full- or part-time employees, including workers on paid vacations or other types of paid leave; salaried officers, executives, and staff members of incorporated firms; employees temporarily assigned to other units; and noncontract employees for whom the reporting unit is their permanent duty station regardless of whether that unit prepares their paychecks. The OES survey includes all full- and part-time wage and salary workers in nonfarm industries. Self employed workers, owners and partners in unincorporated firms, household workers, and unpaid family workers are excluded."

An important question is whether physician owners of a medical practice are eligible for the OES sample. RTI's communications with BLS indicated the following:[6] owner/partners of unincorporated firms are not OES-eligible. Medical practices may be organized as professional corporations, among other legal forms. Therefore, physician owners who are considered to be employees of their practice professional corporation and are subject to federal unemployment insurance tax are eligible for the OES sample. All self-employed incorporated physicians who are covered by unemployment insurance are eligible for the OES sample.

American Medical Association data indicates there were 752,572 active patient care physicians including residents in 2010 (AMA, 2012). The OES-estimated number of employed patient care physicians eligible for the OES sample is 512,800 in 2011 (RTI tabulations) or 68 percent of all AMA-identified patient care physicians. This employment share is higher than reported elsewhere[7] and confirms that the OES data contain observations for physician owners who are employees of their professional corporations or other incorporated organization. It is not clear how the mix of owner/non-owner physicians varies across geographic areas and affects OES-measured relative "physician wages."

Definition of Occupation

"Occupations are classified based on work performed and on required skills. Employees are assigned to an occupation based on the work they perform and not on their education or training. For example, an employee trained as an engineer but working as a drafter is reported as a drafter. Employees who perform the duties of two or more occupations are reported in the occupation that requires the highest level of skill or in the occupation where the most time is spent if there is no measurable difference in skill requirements. Working supervisors (those spending 20 percent or more of their time doing work similar to the workers they supervise) are classified with the workers they supervise. Workers receiving on-the-job training, apprentices, and trainees are classified with the occupations for which they are being trained."

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6 E-mail from Michael Soloy of BLS, August 14, 2012.

7 The Center for Studying Health System Change (2009) reports that in 2008, 56.3% of physicians were full/part owners of their practice and 43.7% were non-owners, which can be "employees" or "independent contractors". These results are from the 2008 Health System Physician Tracking Survey, which is a nationally representative mail survey of U.S. physicians providing at least 20 hours per week of direct patient care. The sample of physicians was drawn from the American Medical Association master file and included active, nonfederal, office- and hospital-based physicians. Residents and fellows were excluded, as well as radiologists, anesthesiologists and pathologists. The survey includes responses from more than 4,700 physicians, and the response rate was 62 percent.

The OES definition of "occupation" has an important implication for physicians, namely that interns and residents, who may be considered "trainees," are included as "physicians" in the OES survey. OES employment and wages are available for the following physician specialties (data are not available for all specialties in all areas, see below):

- anesthesiologists
- family and general practitioners
- internists, general
- obstetricians and gynecologists
- pediatricians, general
- psychiatrists
- surgeons
- physicians and surgeons, all other.

Definition of Wage

"A wage is money that is paid or received for work or services performed in a specified period. base rate pay, cost-of-living allowances, guaranteed pay, hazardous-duty pay, incentive pay such as commissions and production bonuses, and tips are included in a wage. Back pay, jury duty pay, overtime pay, severance pay, shift differentials, nonproduction bonuses, employer costs for supplementary benefits, and tuition reimbursements are excluded. Federal government, the U.S. Postal Service (USPS), and some states report individual wage rates for workers. Other employers are asked to classify each of their workers into one of the following 12 wage intervals:

	Wages	
Interval	**Hourly**	**Annual**
Range A	Under $9.25	Under $19,240
Range B	$9.25 to $11.49	$19,240 to $23,919
Range C	$11.50 to $14.49	$23,920 to $30,159
Range D	$14.50 to $18.24	$30,160 to $37,959
Range E	$18.25 to $22.74	$37,960 to $47,319
Range F	$22.75 to $28.74	$47,320 to $59,799
Range G	$28.75 to $35.99	$59,800 to $74,879
Range H	$36.00 to $45.24	$74,880 to $94,119
Range I	$45.25 to $56.99	$94,120 to $118,559
Range J	$57.00 to $71.49	$118,560 to $148,719
Range K	$71.50 to $89.99	$148,720 to $187,199
Range L	$90.00 and over	$187,200 and over"

Source: http:www.bls.gov/oes/current/methods_statement.pdf

The OES inclusion of "production bonuses" implies that physician pay based on productivity, which is common, is included in OES "wages." However, BLS has stated to RTI in an e-mail that "[f]or the self-employed incorporated physicians that are covered by UI [unemployment insurance], OES does not include profit distributions in the OES wage estimates."[8] Thus it appears that BLS defines OES "wages" for self-employed physicians (practice owners) to include only "salary" and not the owner's share of profits. On the one hand, the exclusion of profit distributions from OES wages may make OES measurement of compensation more consistent between employee and self-employed physicians. On the other hand, for practice owners, salaries do not represent total compensation and it is not clear how meaningful salary alone is for self-employed physicians.

Also, it is important to note that most OES data are collected using an open-ended upper wage range. Because the hourly earnings of a considerable portion of physicians exceed the upper range threshold of $90, it is important to understand how the BLS calculates wages for this range in particular, which is discussed in the next section.

Employers are asked to classify full-time workers using an annual wage and part-time workers using an hourly wage. For full time employees, employers report the number of full-time employees that fall into a given annual wage interval. For part-time employees, employers report the number of part-time employees that fall into a given hourly wage interval. In order to move between an annual wage and an hourly wage, BLS uses a 2,080 hours/year conversion factor. Because BLS does not collect hours worked, the wages included in the OES data are not adjusted for hours worked.

Calculation of Mean Wage from Wage Intervals

"Two externally derived parameters are used to calculate wage rate estimates. They are: the mean wage rates for each of the 12 wage intervals and wage updating factors (also known as aging factors).

1) Determining a mean wage rate for each interval

The mean hourly wage rate for all workers in any given wage interval cannot be computed using grouped data collected by the OES survey. This value is calculated externally using data from the Bureau's National Compensation Survey (NCS). Although smaller than the OES survey in terms of sample size, the NCS program, unlike OES, collects individual wage data for private sector and state and local government employees. With the exception of the highest wage interval, mean wage rates for each panel are calculated using NCS data for the panel's reference year. The lower boundary of the highest wage interval was $90.00. The mean hourly wage for this interval was calculated using the average of the 2008, 2009, and 2010 NCS data. The mean hourly wage rate for interval L (the upper, open-ended wage interval) is calculated without wage data for pilots. This occupation is excluded because pilots work fewer hours than workers in other occupations. Consequently, their hourly wage rates are much higher."

BLS stated in an e-mail to RTI[9]: "The interval mean for the highest OES open ended interval is calculated ... for all NCS data between $90 to $480/hour. ... this interval mean calculation is done for all

[8] E-mail from Michael Soloy of the BLS to RTI on August 14, 2012.
[9] E-mail from Michael Soloy of BLS to RTI, August 14, 2012.

occupations together, not each detail occupation or occupation group separately. ... All OES data in wage L is then multiplied by this average wage L interval mean value when the OES mean wage is calculated." In other words, the mean wage for the upper open-ended interval is NOT calculated with physician-specific income data. Instead, income data from all occupations is used. It is not clear how accurate this BLS calculation method is for estimating the mean wage of physicians in the upper wage interval.

BLS also stated in its e-mail: "[b]esides using the NCS data to calculate the interval means, we also use the NCS data to calculate variance components that are used to adjust the OES mean wage percent relative standard errors (PRSE) to take into account the OES use of wage intervals instead of point data values. This variance adjustment is much larger for the wage L open ended upper interval than the other OES wage intervals. So the OES PRSE for physicians and other occupations with a high percentage of the employment reported in the upper open ended wage interval reflects the higher uncertainty of the interval mean for this upper open ended interval."

2) Wage aging process

"Aging factors are developed from the Bureau's Employment Cost Index (ECI) survey. The ECI survey measures the rate of change in compensation for ten major occupation groups on a quarterly basis. The eleventh, open-ended, interval is not aged. Aging factors are used to adjust OES wage data in past survey reference periods to the current survey reference period (May 2011). The procedure assumes that there are no major differences by geography, industry, or detailed occupation within the occupational division."

The mean wages by interval and the aging factors are combined by BLS with weighting and benchmarking factors to derive an overall average occupational wage. See "Survey Methods and Reliability Statement for the May 2011 Occupational Employment Statistics Survey."

Suppression of Data to Protect Confidentiality

BLS suppresses data that could reveal the identity of, or allow imputation of the data of, any individual respondent. As part of its data confidentiality policy, BLS does not reveal the algorithm(s) it uses to suppress data for confidentiality. For occupations with lower total employment, including physicians, OES data for a large number of areas are "missing," either because of total lack of respondents or because of data suppression to protect confidentiality.

3.3.2 Medical Group Management Association (MGMA) Survey

This section describes our second source of physician earnings data, which is the MGMA Compensation and Production Survey. Our source for the methodology of this survey is the "Compensation and Production Survey: 2012 Guide to the Questionnaire Based on 2011 Data," which is available at http://www.mgma.com/WorkArea/DownloadAsset.aspx?id=1371032.

Overview

MGMA produces the Physician Compensation and Production Survey annually. The data collected in this Survey provide "comparison data on physician and non-physician provider compensation and production, as well as managerial compensation to help evaluate decisions in a medical practice."

Sample of Physicians

The MGMA data includes employed and self-employed physicians with a minimum of 2 years of practice experience. This data excludes residents and academic physicians. The most recent 2012 MGMA sample includes 62,245 physicians and non-physicians in 2,913 medical organizations. 174 different specialties are represented in this pool of physicians.

MGMA members and non-members are included in the MGMA survey. Of those participating in the survey, 70% are MGMA members and 30% are non-members. The sampled organizations are medical groups that are members of MGMA, as well as selected non-member organizations. Thus, the data are not necessarily nationally representative, but are drawn primarily from a membership list.

Clinicians included in the survey are geographically dispersed. The regional composition of respondents is as follows: East (24%), Midwest (32%), South (21%), and West (23%).

Survey Response Rate

MGMA's 2011 survey report summarized data from 59,375 physician respondents and reflected a 26.6% response rate. The number of invitations sent out for the 2012 survey was nearly 3 times the number in the previous year, but the response rate on the new invitees was very low. The 2012 survey data used for the analyses in this report summarize data from 62,245 physician respondents, but these reflect a response rate of 8.2%.

Sample Size Issues

Because data for a specific location is only available if a minimum of 10 clinicians from 3 practices respond for a given specialty, there is a lot of missing data by area. While the data can theoretically be divided by specialty, partner/non-partner, metropolitan area, and state, in reality this is not feasible because the sample sizes become very small with multiple splits.

Using the MGMA Survey, data can potentially be separated by type of employment and can exclude partners/owners. Because of the small sample size, non-partner data is only available at the state level. As a consequence, analysis is limited to examining the difference between the wages of all versus non-partner physicians by state.

Available Data Elements

The mean, standard deviation and percentiles of compensation per work RVU are available for each physician specialty where the sample size is large enough. The compensation by work RVU ratio is calculated by dividing total compensation by the work RVUs as self-reported for each respondent. Physicians are not required to answer the work RVU question, which limits the number of responses that can be used to construct these measures.

Because of the small sample size, metro-area level data are very limited. After reviewing the MGMA data, there was no physician specialty for which we did not find missing data for many areas.

Included Physicians

Only physicians involved in clinical care are included in the MGMA survey. Practice physicians who are "shareholders/partners, salaried associates, employed and contracted physicians and locum tenens" are included in this survey. Full time physician administrators are not included.

Available Specialties

MGMA data are available for 174 specialties (the full list of specialties is available in the source document cited at the beginning of this section).

The published MGMA data is only available at the sub-specialty level, without statistics for the entire specialty group. For example, cardiology is divided into 4 sub-specialty groups: electrophysiology, invasive, invasive-interventional, and non-invasive. The various series can only be aggregated by computing weighted means, thus losing the percentile distributions and the standard errors.

Definition of Physician Earnings

The earnings reported for this survey includes physician salary, bonus and/or incentive payments, research stipends, honoraria, and a distribution of profits. The reported earnings exclude expense reimbursements, fringe benefits such as retirement plan contributions, life and health insurance, automobile allowances, or any employer contributions to a 401(k) or a 403 (b). There is no indication of upper-level wage censoring.

For many specialties the survey separates responses from physicians eligible for profit distribution ("partners") and responses from all others. Due to sample size issues, non-partner compensation per RVU is available only at the national, regional and state levels, but not by metropolitan and non-metropolitan designations. The MGMA compensation data that we use in this report therefore represents income reported by both employed and self-employed physicians. To investigate the potential effect this might have on our analyses, Section 3.4 includes a brief summary of the differences between all-physician and non-partner data for several specialties at the aggregate state level.

3.3.3 ACCRA Cost of Living Index

The ACCRA cost of living index is developed by the Council for Community and Economic Research (C2ER) and measures the cost of living differences across urban areas (http://www.coli.org/). This index can be used to compare price levels among urban areas for a given time period. However, it cannot be used as a comparison over different time periods, because the urban areas used to construct the index vary over time.

The index represents cost of living differences for households in the top income quintile. Responses from households containing professionals and executives are used to measure the cost of goods in a given area.

Participating Areas

The ACCRA cost of living index includes information from urban areas, which include metropolitan and micropolitan areas. While the majority of the participating communities include major metropolitan areas, second, third, and fourth-tier cities, there are some micropolitan and rural communities that are included. The survey is voluntary, and thus the number of respondents varies from quarter to quarter. At a minimum each quarter will include responses from all the major metropolitan areas (with the exception of New Orleans).Participating areas are identified by the 5-digit Core Based Statistical Area (CBSA) code from the Census Bureau.

Index Components

The following categories (with the percentage weights) are included in the construction of the ACCRA Index. The below weights are calculated based on government survey data from professional and executive households.

- Grocery (13.36%)
- Housing (28.64%)
- Utilities (10.46%)
- Transportation (10.66%)
- Health (4.44%)
- Miscellaneous (32.44%)

3.4 Analysis of BLS Data

3.4.1 Overview and Methods

BLS data are used in this report to construct five different indexes where the geographic unit is individual BLS metropolitan area, or the BLS non-metropolitan areas aggregated to one value per state ("local area analyses"). All of the indexes are constructed from publicly available data released in March of 2012, for the May 2011 surveys. They include:

- An aggregate index from the BLS all-employer, all-occupation data (SOC 00-0000)
- An aggregate index from the BLS all-employer, all-managerial data (SOC 11-0000)
- An aggregate index from the reference professional occupations included in the physician work GPCI
- An index that is the relative wage for family & general practitioner physicians only (SOC 29-1062)
- An index that is the relative wage for general internists only (SOC 29-1063).

We also requested special tabulations of each of the health care occupations (SOC codes 29-xxxx), where the data were aggregated to the level of a single state metropolitan wage and a single state non-metropolitan wage ("state/metropolitan analyses"). The purpose of requesting special tabulations at the state level was to obtain information on physician wages from areas where the public data had to be suppressed for confidentiality purposes. BLS special tabulations were used to construct new state aggregate indexes for family & general practice for general internal medicine physicians. For comparisons we then computed similar aggregate state indexes for the reference professional occupations and the managerial occupations, using the public data and constructing the metropolitan aggregates as employment weighted averages.

Although we had hoped to use other physician specialties from the specially tabulated data, even at the aggregated level there were many states with missing values for other specialties. The group identified "physicians and surgeons, all other" had fewer missing values, but we did not use it for analysis because it includes multiple specialties, and would introduce a type of occupation mix bias due to unequal distribution of specialties across geographic areas.

Reference Professional Index Construction

We replicated the reference professional index that CMS currently uses for the work GPCI following the documentation provided by their contractor, but using the most recent available BLS data. Data were included from the 50 states, the District of Columbia, and Puerto Rico. We aggregated the multiple BLS non-metropolitan areas within each state to a single employment-weighted average non-metropolitan area for that state. A fixed weight index was computed using national employment weights for each included occupation.[10] If missing data for individual occupations within individual areas was present, the weights were renormalized across the non-missing occupations for any given area.[11] The CMS reference professional index is constructed from median wage values, but we computed reference indexes using both median and mean wage values. The various physician specialty series have substantially more areas with missing data in the median wage field than in the mean wage field (due to the way in which BLS-OES interpolates data within intervals – see Section 3.3.1). For consistency, we use the reference professional index constructed from mean values in all of the analyses that follow. Additional documentation on the reference professions and employment weights is provided in ***Appendix Tables 1A*** through ***1C***. ***Appendix Table 1D*** lists the final computed index values by area, as generated by both the mean and median BLS wages.

There are 181 different occupation codes currently used in CMS' reference professional index, but the contribution of any one occupation in the group is based on its share of total employment for the group. Because the BLS national employment weights are used as each occupation's weight in a fixed-

[10] Employment weights are defined as the share of total employment, and computed as BLS' total employment estimate for the occupation divided by the sum of all of the total employment estimates for each occupation in the group. Employment weights can be different by industry.

[11] Note that this is consistent with the treatment of missing data in work that MedPAC has done to construct alternative hospital wage indexes, but is different from the way that CMS currently handles missing data in the GPCI. Documentation for the computations used for FY 2012 GPCIs indicates that CMS replaces missing values for a given occupation in a given location with the national wage for that occupation. This has the effect of reducing variation in the resulting index.

weight (or "Laspeyre's") index, in practice the reference professional index turns out to be most heavily influenced by nurses and teachers. While these occupations might not seem to be close to the medical profession in terms of education or expected earnings, they have the advantage of being present in every labor market, while data for higher-paid professionals is often missing for specific markets. The underlying premise of the reference wage index is not that the wage levels are similar between the reference group and the physician groups, but that the geographic variation in the reference professional group is a reasonable expectation for geographic variation of all professionals (including physicians).

It could be argued, however, that geographic variation in wages for teachers and nurses is influenced in many areas by collective bargaining, by temporary shortages, or (in the case of teachers) other factors affecting public sector budgets. If so, variation in these two occupations may not be generalizable to variation in other professional earnings. Thus the specific occupational construction of the reference index could be imperfect even if the underlying concept is reasonable.

We considered other measures from higher paid professions that were still likely to be distributed across most if not all BLS areas, and constructed an alternative reference index using BLS published average wage for all managerial occupations (SOC 11-000). The national mean wage for this group was approximately $117,000, as compared to the national mean for the reference professional group which was approximately $65,000. For additional perspective, we also constructed an index on the BLS published all-occupation, all-employer wage (SOC 00-000, with a national average wage approximately $45,000).

The 181 occupations used in constructing the reference professional index belong to seven occupational groups. To determine how similar they were to each other, we constructed sub-indices for each of the seven occupational groups and produced zero-order Pearsonian correlation coefficients. All of the correlation coefficients are positive (***Exhibit 3-1***). Aside from the coefficients with the pharmacists (Index 6), the coefficients range from 0.40 to 0.688. The correlation coefficients for the pharmacist index with the other six indices are much lower, ranging from 0.133 to 0.425.

Exhibit 3-1: Correlation Coefficients Among the 7 Component Occupational Groups Comprising the Reference Index

Index	Index 1	Index 2	Index 3	Index 4	Index 5	Index 6	Index 7
	Architecture and Engineering	Computer, Mathematical, life & Physician science	Social science, community and social service & Legal	Education, training, and library	Registered nurses	Pharmacists	Art, design, entertainment, sports, & media
1	1						
2	0.688	1					
3	0.482	0.675	1				
4	0.413	0.594	0.514	1			
5	0.493	0.635	0.588	0.587	1		
6	0.178	0.220	0.244	0.133	0.425	1	
7	0.460	0.676	0.633	0.535	0.557	0.098	1

Source: RTI analysis of BLS-OES survey data from May 2011.

Physician Index Construction

Single-occupation index values were computed for Family Medicine/General Practice (SOC 29-1062) and Internal Medicine (SOC 29-1063). There was no need to use employment weights to construct area-level average wages as each index is based on a single occupation. For each specialty we computed a national aggregate wage equal to the employment-weighted average of mean wages across all areas with non-missing employment numbers, using BLS national all-employer employment estimates by occupation by area. The index is computed as the area wage divided by the aggregate national wage. Where either wage values or total employment are not reported for an area, the index value for that area will be missing.

The first item that invites comment is the large number of areas for which we can't compute an index value, even though we picked to the two most complete physician wage series. ***Exhibit 3-2*** illustrates the extent of the problem even using the most complete BLS physician wage series, which is for family & general practice. The problem is worse for the general internal medicine series (not shown). In the Northeast region we have no family & general practice index values for 30% of the metropolitan areas and for 17% (1 out of 6) of the non-metropolitan areas. Individual, smaller metropolitan areas can have very small numbers of employers for any one occupation, and are more likely than aggregate non-metropolitan areas to be have data suppressed from the public files.

Exhibit 3-2: Markets without BLS family medicine physician wage data, by region and metropolitan status

Census Region		Metro	Non-metro	All
Northeast	# BLS Areas	54	6	60
	# with Family medicine index	38	5	43
	% missing	30%	17%	28%
Midwest	# BLS Areas	69	12	81
	# with Family medicine index	60	11	71
	% missing	13%	8%	12%
South	# BLS Areas	123	16	139
	# with Family medicine index	99	16	115
	% missing	20%	0%	17%
West	# BLS Areas	69	13	82
	# with Family medicine index	64	13	77
	% missing	7%	0%	6%
Total	# BLS Areas	315	47	362
	# with Family medicine index	261	45	306
	% missing	17%	4%	15%

Source: RTI analysis of BLS-OES survey data from May 2011.

Cost-of-living Index

Finally, we also made use of data from the ACCRA cross-sectional cost-of-living index that was described in Section 3.3.3, to test the overall correlation of wages with cost of living. ACCRA data are available for a subset of metropolitan and micropolitan areas (identified by CBSA code), but since micropolitan areas tend to include only larger rural counties, our ACCRA-based explorations are limited to metropolitan BLS areas only. There are 403 metropolitan BLS areas; however, some of them are New England city or town area (NECTA) codes rather than metropolitan CBSAs. For the NECTA regions, we cross-walked the CBSA code identified by ACCRA to the appropriate NECTA code based on overlapping populations and proximity. Our final file with both BLS and ACCRA cost of living index values includes only 225 CBSA-based markets, or roughly 57 percent of those in the BLS file. ACCRA data are not available for Puerto Rico. Apart from that distinction, however, a review by census division showed no significant differences between missing and non-missing areas in the median values for any of our three BLS indexes. For comparisons using the ACCRA data, we re-based the other BLS indexes so that they center on a value of 1 that reflects the mean wage for the subset of areas in the analysis rather than the full sample mean.

Analytic Approach

The over-riding objective of the empirical studies is to provide guidance on what index, if any, could be considered a valid measure of compensating wage differentials appropriate to physicians. We use a variety of approaches to accomplish this, depending on the completeness of the data. These include providing information on the distribution of the index values (through descriptive tables and histograms); on correlation across indexes (through correlation coefficients and scatter plots); and on the ability of the

alternative indexes – either the reference professional or managerial – to predict variation in either of the two physician indexes (through non-linear and linear regression modeling).

Because there is particular interest in rural-urban differences in each of these wage series, several of the exhibits are stratified by metropolitan and non-metropolitan location. In most cases, however, there is as much or more variation across states or regions as there is between rural and urban areas. We find that the overall variation is as or more important than national rural-urban differences.

3.4.2 Results (1): Local Area Analyses

Geographic Variation in the Reference Professional Indexes

The local area reference professional index has a surprisingly wide range – from 0.469 to 1.535, or more than a three-fold difference from the lowest to the highest wage areas (***Exhibit 3-3***). At the median there is a 12 point differential between rural and urban areas (0.743 vs. 0.860), but several metropolitan areas have reference index values that are lower than the lowest rural areas. Puerto Rico normally accounts for the lowest wage areas in any US data, but even with Puerto Rico excluded, the lowest value is 0.477. The distribution of the managerial index is very similar to that of the reference professional index. For all three indexes, there is less dispersion in non-metropolitan wages than there is in metropolitan wages. Finally, we note that the gap between metropolitan and non-metropolitan areas is smaller for the all-occupation index than for either of the other two (an 8 point difference at the median).

Exhibit 3-3: Distribution of alternative physician index values, by metropolitan status

Type of Area	N	Mean		Std Dev	Min	25th pct	Median	75th pct	Max
		Weighted	un-weighted						
Reference Professional Index									
Metro	403	1.031	0.878	0.146	0.469	0.791	0.860	0.961	1.535
Non-metro	49	0.751	0.764	0.100	0.495	0.701	0.743	0.808	1.159
Total	452	1.000	0.865	0.146	0.469	0.775	0.850	0.946	1.535
Managerial Index									
Metro	403	1.030	0.883	0.135	0.418	0.789	0.876	0.956	1.397
Non-metro	49	0.750	0.755	0.086	0.509	0.710	0.766	0.797	0.970
Total	452	1.000	0.870	0.136	0.413	0.777	0.863	0.937	1.397
All-occupation Index									
Metro	403	1.031	0.913	0.134	0.501	0.831	0.892	0.972	1.551
Non-metro	50	0.802	0.825	0.094	0.543	0.764	0.813	0.874	1.107
Total	453	1.00	0.903	0.133	0.501	0.821	0.881	0.966	1.551

Table shows index values that were computed from wage data that was not adjusted for hours worked.

Source: RTI analysis of BLS-OES survey data from May 2011.

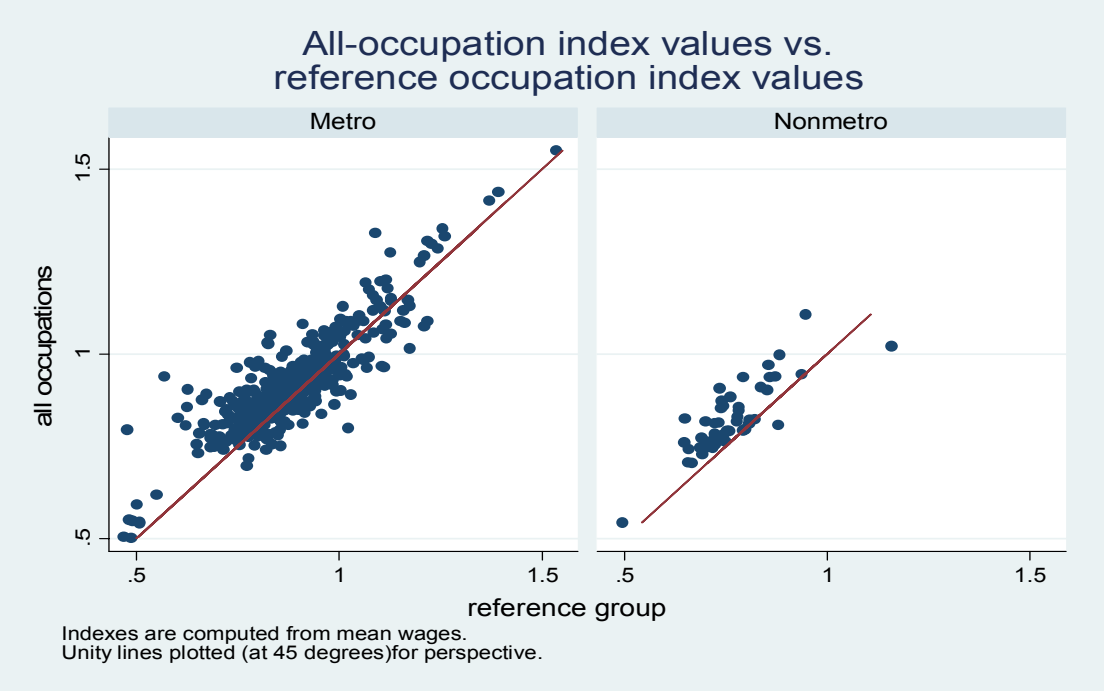
The reference professional index is highly correlated with both the managerial and the all-occupation indexes, nationally and within rural and urban sub-groups (***Exhibit 3-4***). We noticed that among non-metropolitan state areas, all-occupation index values are systematically higher than reference group index values (***Exhibit 3-5***). This may account for the lower over-all rural-urban differential noted above for the all occupation index. If rural-urban differentials are greater for higher-paid occupations than for others—or if geographic variation in higher-wage occupations is in any other way systematically different from geographic variation in lower-wage occupations—this lends support to the choice of the a substitute index based on higher-paid professions—whether through the set of reference professionals now used, or through something like the managerial occupation index.

Exhibit 3-4: Correlation of reference professional index with other non-physician BLS indexes

	Pearson correlation coefficients (all correlations significant at p<.0001)		
	reference index	managerial index	all occupation index
All areas			
reference index	1		
managerial index	0.8063	1	
all occupation index	0.8759	0.8522	1
Metropolitan areas only			
reference index	1		
managerial index	0.7965	1	
all occupation index	0.8725	0.8611	1
Non-metropolitan areas only			
reference index	1		
managerial index	0.7208	1	
all occupation index	0.8282	0.5797	1

Source: RTI analysis of BLS-OES survey data from May 2011.

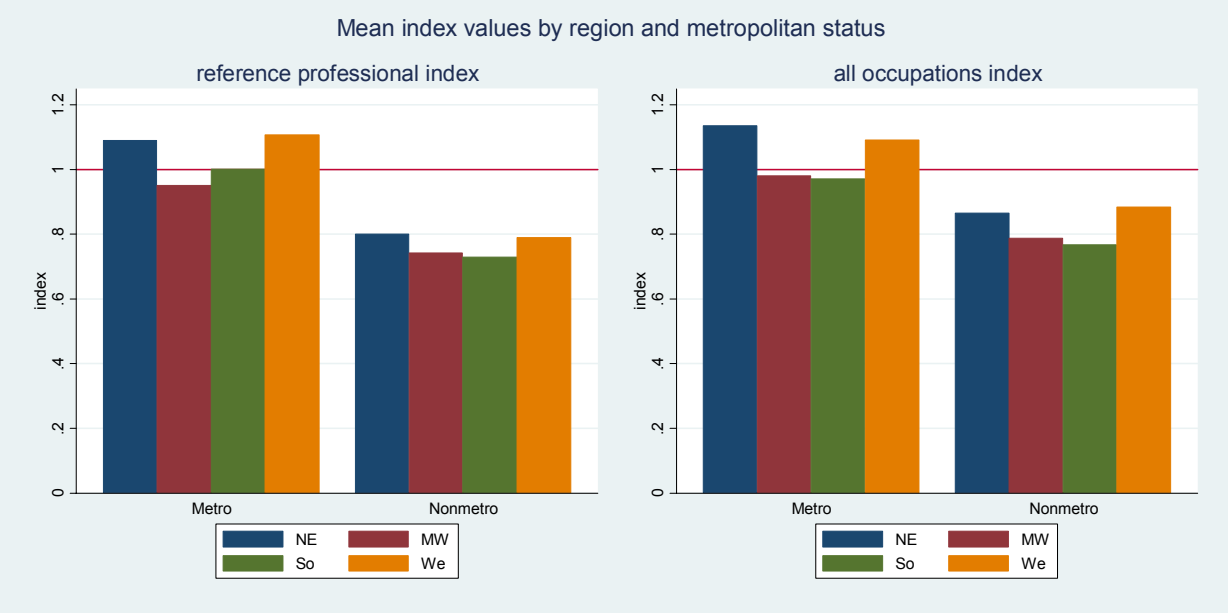
Exhibit 3-5: Rural-urban differences in the correlation of reference professional index vs. all-occupation index



Source: RTI analysis of BLS-OES survey data from May 2011.

There are strong regional wage patterns in the US, where wages in the Northeast and West are above the national average and those in the South and Midwest are at or below the average, even controlling for metropolitan status. As shown in ***Exhibit 3-6***, these regional patterns appear equally strong in the reference professional index as in the all-occupations index. A similar graph using the managerial index (not shown) looks almost identical to the graph for the reference occupations.

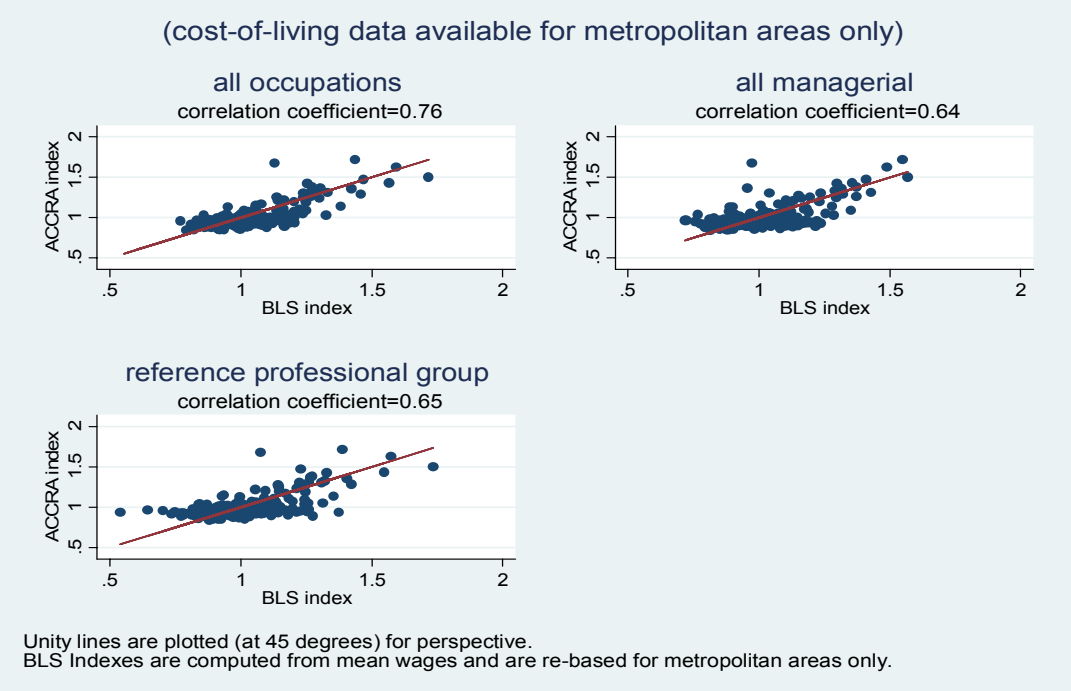
Exhibit 3-6: Regional variation in BLS non-physician wage indexes



Source: RTI analysis of BLS-OES survey data from May 2011. Graphed data exclude Puerto Rico.

As one last exploratory analysis of the BLS non-physician data, we compared these three indexes to index values from the ACCRA cost of living index. Across the 225 metropolitan areas for which we have overlapping data, the all-occupation index has the highest correlation with the cost-of-living index (coefficient 0.76). The reference professional and managerial indexes are slightly less correlated (coefficients 0.65 and 0.64, respectively). Scatter plots for each of the three against the cost-of-living index indicate, however, that the correlation on the latter two is driven largely by the extreme high value areas; for a large majority of the areas, the reference index increases steadily even though the cost-of-living index is flat (***Exhibit 3-7***).

Exhibit 3-7: Correlation of ACCRA cost of living index with selected BLS group indexes

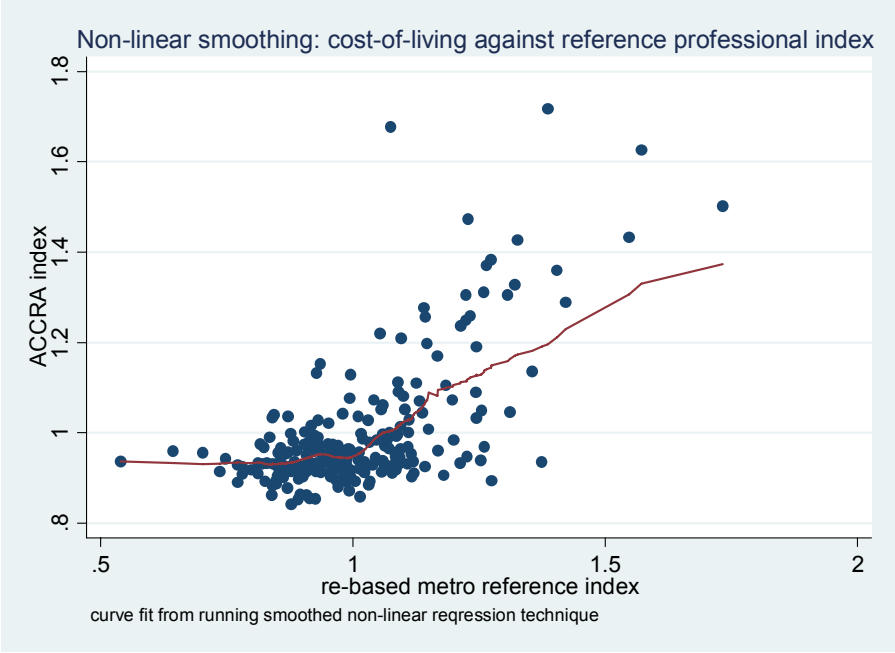


Source: RTI analysis of ACCRA Cost of Living Index data from 2011 and BLS-OES survey data from May 2011.

This phenomenon is easier to see in ***Exhibit 3-8***, from a scatter plot where a "smoothing" curve has been overlaid, using a technique sometimes called "local weighted scatter smoothing (or "lowess" for short).[12] The curve is flat until the reference index is around 1.1 or 1.2, and only then acquires the expected upward slope. In contrast, a similar curve overlaid over a scatter plot using the all-occupations index (not shown) is upwardly sloping throughout, as predicted by the theory underlying compensating wage differentials. The shape of the reference industry curve could be a fluke of the data, although the fact that the pattern is also present in the managerial index makes this less likely.

[12] These are implemented by constructing multiple local lines on short overlapping "bands" of data, and smoothing them to a single line. The shorted the "band width", the more jittery the curve is. We chose a short band width for this graph to be sure it captures the trends at the sparsely populated upper ends of the distributions.

Exhibit 3-8: Reference professional index and the ACCRA cost of living index: scatter plot and fitted curve



Source: RTI analysis of ACCRA data from 2009–2011 and BLS-OES survey data from May 2011.

The differences seen in the plots in ***Exhibit 3-7*** confirms that professional wages behave somewhat differently from other occupations with respect to cost-of-living related compensating wage differentials. *If* Congress and CMS determine that physician work should be adjusted for geographic differences in the price of labor, and *if* the basis for that adjustment cannot be variation in physician income itself, then these data suggest that an adjustment that is based on variation in some type of other professional wages would be preferable to an adjustment based on variation in all occupations, or an adjustment based directly on variation in cost-of-living.

Geographic variation in BLS physician wages

Variation in the two BLS physician wage indexes looks nothing like the variation in any of the three BLS non-physician wage indexes. Distribution statistics are provided in ***Exhibit 3-9***. Both indexes show at least as much dispersion (from 0.415 to 1.417 for family practice, and 0.301 to 1.349 for general internal medicine), but at the median there is no substantive rural-urban differential for family practice (1.008 vs. 1.007), and a nearly 7 point differential *in favor of* rural areas for internal medicine (1.151 vs. 1.084).

Exhibit 3-9: Distribution of BLS physician index values by metropolitan status

Type of Area	N	Mean		Std Dev	Min	25th pct	Median	75th pct	Max
		Weighted	un-weighted						
Family & General Practice Series:									
Metro	264	0.994	1.001	0.162	0.415	0.901	1.007	1.106	1.417
Non-metro	45	1.030	1.015	0.107	0.812	0.938	1.008	1.097	1.227
Total	309	1.000	1.003	0.155	0.415	0.912	1.008	1.104	1.417
Internal Medicine Series:									
Metro	113	0.994	1.047	0.199	0.301	0.934	1.084	1.196	1.349
Non-metro	33	1.056	1.109	0.121	0.787	1.040	1.151	1.191	1.315
Total	146	1.000	1.061	0.185	0.301	0.982	1.087	1.196	1.349

Table shows index values that were computed from wage data that was not adjusted for hours worked.

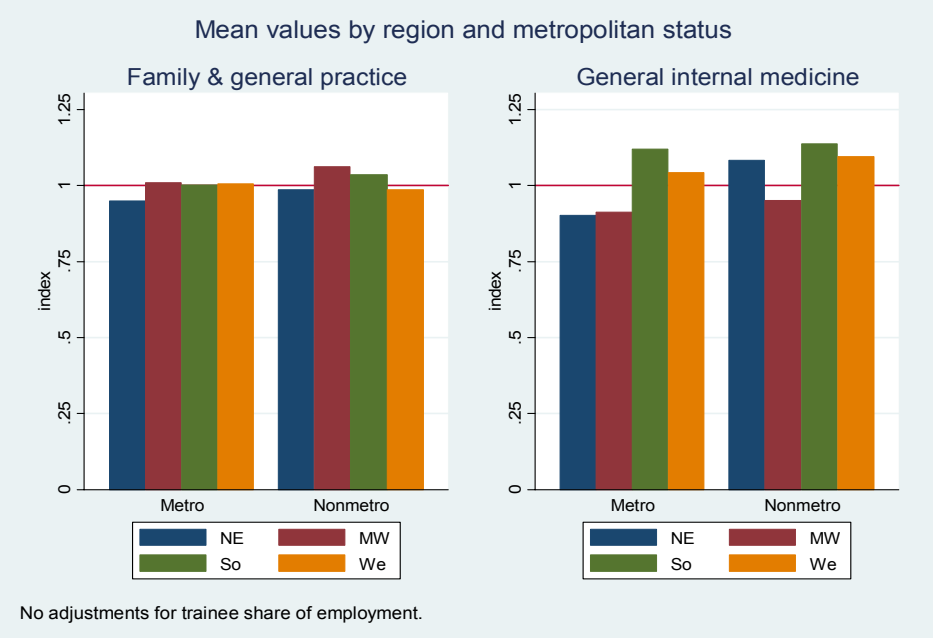
Source: RTI analysis of BLS-OES survey data from May 2011.

Higher wages in nonmetropolitan areas are not expected based on theory, although it is worth pointing out that these findings are not inconsistent with what Reschovsky and colleagues found when they stratified on small rural areas. To confirm what we found with the indexes we also computed aggregate average metropolitan and non-metropolitan wages for a number of individual occupations in the public BLS data, including teaching and other professional occupations considered for inclusion in an alternative professional index (results are provided in ***Appendix Table 2***). With very few exceptions, the only occupations that we found with higher BLS national average wages in non-metropolitan areas are for physicians and a small number of other independently billing health care providers.

Patterns in regional variation are also very different from those shown by other occupations (***Exhibit 3-10***). In the family practice index there is surprisingly little regional or rural-urban variation. In general internal medicine wages are higher in the south and west regions (for both metropolitan and non-metropolitan areas) and also higher for non-metropolitan areas in the northeast.

In interpreting the BLS metropolitan-nonmetropolitan and other wage differences, it is important to keep in mind that the BLS wage data are not adjusted for hours worked. Many argue that rural physicians spend more hours on call and travel greater distances for work than their urban counterparts (Kitchell, 2011), Reschovsky and Staiti find that "rural physicians typically work somewhat longer hours—on average about 4 percent, or two hours, more a week—than urban physicians" (Reschovsky and Staiti, 2005), Work-hours-adjusted rural physician wages may be lower, and the unadjusted urban-rural difference would overstate the hours-adjusted difference. Reducing the non-metro index values by 4 percent in ***Exhibit 3-9*** would bring the metro and non-metro indexes into near equality. The higher urban wages predicted by theory are still not observed.

Exhibit 3-10: Regional variation in BLS physician wage indexes



Source: RTI analysis of BLS-OES survey data from May 2011.

A major source of concern with the BLS physician series is that it includes wages for residents and fellows. In areas with a high concentration of trainees relative to total surveyed physicians, this has the potential to distort area wages by bringing down the means and medians in metropolitan areas where the larger training programs tend to be located. In smaller metropolitan areas where large teaching centers dominate local physician practice, including trainee wages in the total area wages could create significant downward bias. The mean stipend for residents and fellows varies only slightly by region, and the Association of American Medical Colleges (AAMC) estimated mean stipends plus benefits in 2010 at roughly $50,000 for a second-year resident.[13] While examining the percentile distributions in the BLS family & general practice wages, we found that the 10th percentile wage is below $50,000 for 20 of the 361 BLS areas where percentile distributions are published, suggesting that there are markets where the concentration of residents substantially alters the mean and median figures.

If we know the number of residents located in each BLS area for a given specialty, and have a reasonable estimate of trainee stipends, it is possible to estimate the proportion of BLS employment that is accounted for by trainees. If this number is reliable, it is possible to calculate an adjusted wage.[14] We contacted the American Council on Graduate Medical Education (ACGME) to find data on training programs by location, and were directed to their public website that provides a look-up function to

[13] AAMC Survey of Resident/Fellow Stipends and Benefits, 2010.Downloaded at https://www.aamc.org/download/158738/data/2010_stipend_report.pdf

[14] The BLS published wage (W_{BLS}) is a mixture of the trainee wage ($W_{trainee}$) in the proportion of respondents who are trainees (P), and the non-trainee wage (W_{ADJ}) in the proportion of respondents who are not trainees (1-P). If we have P and we assume a base stipend (we used $40,000/year), then we can calculate the adjusted wage by solving for W_{ADJ} in the equation $W_{BLS} = P(W_{trainee}) + (1-P)(W_{ADJ})$.

identify all accredited programs, the location of the home program (which should also be where their employers are located for purposes of the BLS sampling frame) and the number of filled residency slots. We used this function to look up each family medicine program and link it to a BLS area and compute an adjusted area mean. From the ACGME information we identified 236 family medicine training programs that were located in BLS areas contributing to the family & general practice index. ***Exhibit 3-11*** summarizes the trainee data that were downloaded and merged to the BLS wage files, and information on the specific family medicine training programs that were identified for this purpose is included as ***Appendix Table 3.***

We can't be accurate about matching filled slots by year because of the 3-year average over which each year of BLS data is collected. Whether for this reason or because of sampling error on the BLS employment estimates, the calculated area "trainee share" was close to 100% in many areas (and even above it in a few). In implementation we put an upper limit of 60% on the adjustment, which censored the adjusted mean wage in four areas. The adjusted index had greater dispersion than the unadjusted one (***Exhibit 3-12***), and we are not confident that the adjustment is an improvement on the published data. We expected to see larger adjustments in metropolitan areas with unusually low mean wages, but areas with the highest estimates of trainees as a proportion of employment were not necessarily areas with low mean wages, thus this is not generally what happened.

Exhibit 3-11: Trainees identified for adjusting the mean wage in family and general practice

Trainee Data (Family Medicine only)	
Family Medicine Training Programs Documented	435
Total Number Trainees (slots filled)	9,748
Number of BLS Areas with Training Programs	236
Of which: Number with Family & General Practice wage and employment data	207
Trainees as share of BLS Area Employment Estimate:	
mean	0.21
std deviation	0.19
25th to 75th percentile	.08 to .27

Source: RTI analysis of ACGME data at http://www.acgme.org/adspublic/

Although we are providing statistics on the source data and the adjustment results in this section, and we have included the number as an explanatory variable in some for the physician wage regressions, we cannot recommend this approach with any enthusiasm. Based on these problematic results just from the family medicine training programs, we decided not to gather the trainee data to do the same for the internal medicine residencies.

Exhibit 3-12: Distribution family & general practice index values before and after trainee adjustment

	N	Min	25th pct	Median	75th pct	Max
As computed from the published data	309	0.415	0.912	1.008	1.104	1.417
As adjusted for trainees as share of total physician employment	308	0.231	0.403	0.902	1.024	1.144

Source: RTI analysis of BLS-OES survey data from May 2011 and ACGME data at http://www.acgme.org/adspublic/

Correlation of BLS Physician with BLS Reference Professional Index

In this section we present evidence on the correlation (or lack thereof) between individual BLS physician specialty indexes and the BLS reference professional index. Cross-index correlations are summarized in ***Exhibit 3-13***, and scatter plots are presented in ***Exhibit 3-14***. Both exhibits demonstrate very clearly that geographic variation in the BLS physician wage series is unrelated to geographic variation in other professional wages, whether defined by the CMS reference professional index or using managerial wages.

For the sample as a whole and among metropolitan areas only, correlation coefficients for the adjusted family & general practice index are lower than those for the unadjusted (though neither is statistically significant). There is a negative but significant correlation between the internal medicine index and the reference professional index (−.202, p=.01) as well as the managerial index (−0.234, p<.01), with the somewhat startling implication that income in this specialty is inversely proportional to incomes of other professionals. (Although the fitted curves in ***Exhibit 3-14*** suggest that the negative association is only present in lower wage areas.)

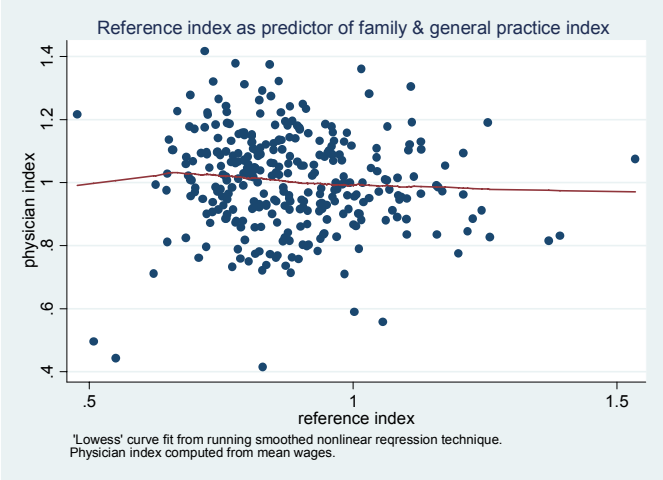
The scatter plots, which are done only for the reference index, include the same fitted lowess curves as were described earlier in this section. If the BLS physician wages can be accepted as valid—most importantly, if we think that they are not biased either by including the trainee wages or by inadvertently including entrepreneurial return—then our findings here confirm that the reference index is not a valid substitute for relative wages for either of the two specialties. Later in this report we will use weighted least squares regressions to further explore this finding, refining the model by adding variance weights and exploring some regional and rural components. The main story, however, can be seen from these correlation graphs.

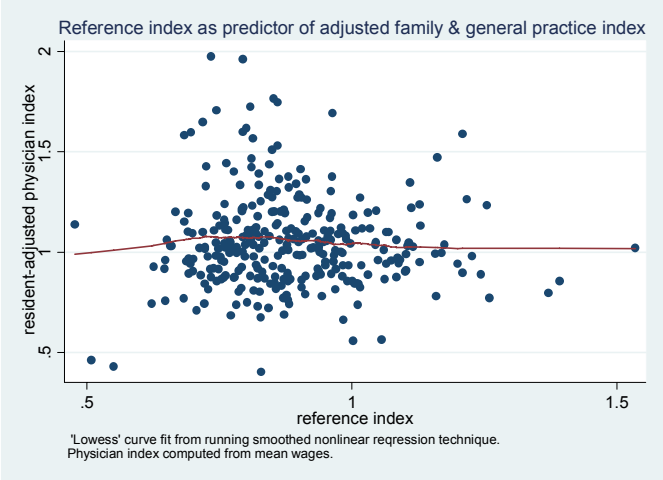
Exhibit 3-13: Cross-index correlation coefficients

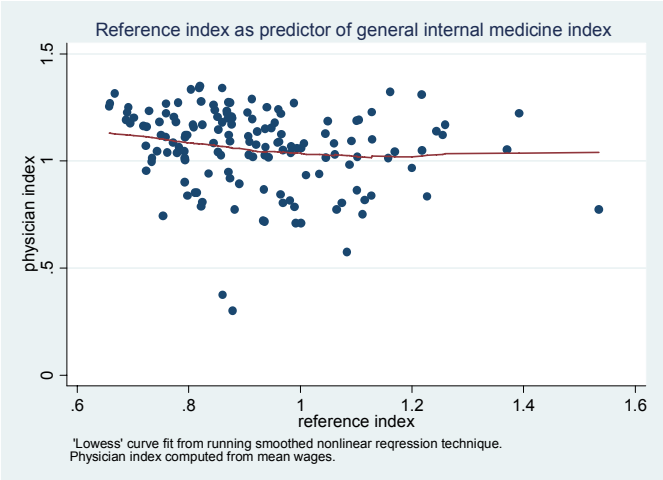
	Pearson correlation			
	reference professional index to physician indexes		managerial index to physician indexes	
	coefficient	p-value	coefficient	p-value
All areas				
reference index	1			
managerial occupations index			1	
family med (unadjusted)	-0.079	0.16	-0.022	0.70
family med (adjusted)	-0.039	0.49	-0.024	0.67
general internal medicine	-0.202	0.01	-0.234	<0.01
Metropolitan areas only				
reference index	1			
managerial occupations index			1	
family med (unadjusted)	-0.060	0.34	-0.007	0.92
family med (adjusted)	-0.085	0.17	-0.090	0.15
general internal medicine	-0.134	0.16	-0.184	0.05
Non-metropolitan areas only				
reference index	1			
managerial occupations index			1	
family med (unadjusted)	-0.261	0.08	-0.073	0.63
family med (adjusted)	-0.275	0.07	-0.091	0.55
general internal medicine	-0.385	0.03	-0.284	0.11

Source: RTI analysis of BLS-OES survey data from May 2011.

Exhibit 3-14: BLS reference professional index as predictor of BLS physician indexes: locally-weighted smoothed scatter plots







Source: RTI analysis of BLS-OES survey data from May 2011.

3.4.3 Results (2): Aggregate State Metro/Non-metro Analyses

Limitations of the Data

We requested specially tabulated aggregate state metro/non-metro area wages to obtain information from states where the public data contained many areas with missing values. Although we had hoped to use other physician specialties from the specially tabulated data, even at the aggregated level there were many states with missing non-metro values for some of the requested health care occupations. For example, of the possible 100 state metro/non-metro areas, mean wages for general internal medicine are available in 85, for obstetrics and gynecology in 66, and for surgeons, in only 49. ***Exhibit 3-15*** presents this information along with the distribution of actual annual BLS wages, for a selection of physician and non-physician professionals that were included in the special tabulations.

The impact of upper-income censoring (discussed earlier in Section 3.3.1) is also evident in these data (***Exhibit 3-16***). In the distribution of surgeon's aggregate state metro/non-metro area annual wage, for example, the highest imputed area mean wage is $253,000 and 40 percent of the areas are at or above $240,000. This creates a very different distribution for surgeons than for lower-paid specialties or other professions, and would significantly limit the usefulness of any geographic index computed from these measures.

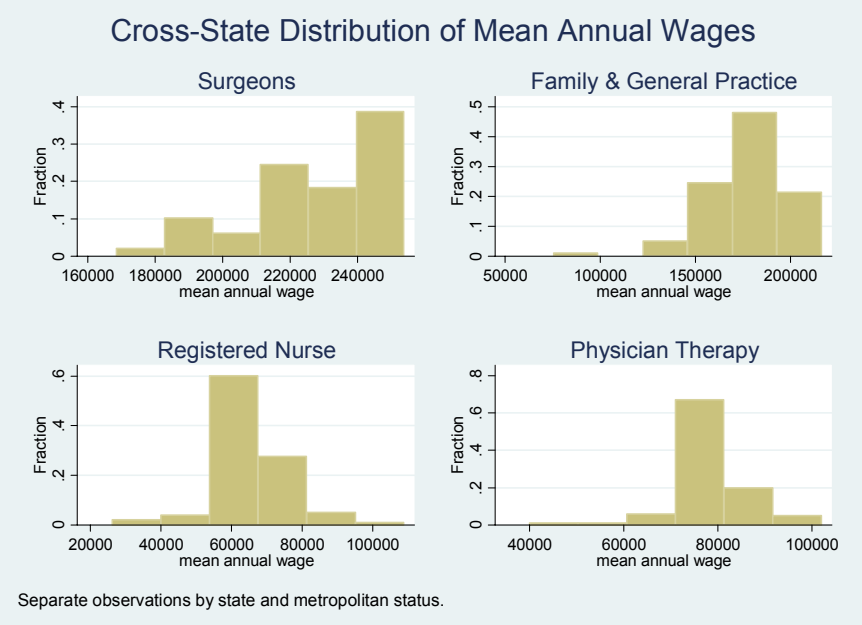
Exhibit 3-15: Distribution of BLS wages for selected health care professionals, from special tabulations by state and metropolitan status

Occupation Code and Description	N[(1)]	min	p10	p25	p50	p75	p90	Max
29-1062 Family & Gen Practice	98	75,525	154,877	165,402	177,830	189,613	206,398	216,403
29-1063 General Internist	85	116,085	157,498	188,094	204,714	220,106	232,066	247,894
29-1064 Obstetrics & Gynecology	66	109,616	180,294	202,738	218,691	236,496	245,066	251,638
29-1067 Surgeons	49	168,563	195,749	217,506	228,384	242,611	249,746	253,781
29-1069 Physicians & Surgeons, All Other	98	123,448	163,946	182,021	202,218	215,634	232,752	249,454
29-1021 Dentist	96	63,461	124,322	146,505	164,455	189,290	209,227	238,638
29-1051 Pharmacist	100	65,770	102,825	106,683	111,675	116,969	121,909	139,090
29-1111 Registered Nurses	98	26,125	55,099	58,469	62,941	69,368	76,502	108,867
29-1122 Occupation Therapy	98	35,776	61,610	65,582	71,458	76,253	82,950	95,160
29-1123 Physical Therapy	100	39,998	71,760	74,870	77,844	81,567	86,632	102,066
29-1126 Respiratory Therapy	97	21,133	45,510	48,568	52,686	56,680	65,562	69,992
29-1131 Veterinarian	99	52,000	67,496	74,734	84,032	95,306	108,888	126,194

[(1)] Includes 50 states, District of Columbia and Puerto Rico. Maximum number of observations is 52 metropolitan + 48 non-metropolitan=100. Source: RTI analysis of BLS special tabulations for industry code 29.

Source: RTI analysis of BLS special tabulations for industry code 29.

Exhibit 3-16: Effect of upper-level censoring on distribution for selected health care professionals



Source: RTI analysis of BLS special tabulations for industry code 29.

Rural-Urban Differentials

In the aggregate state metro/non-metro analyses we continue to see higher rural wages for physicians, contrary to the patterns seen in other occupations, ranging from 10% higher in the "all other physicians and surgeons" group to 1% higher in the family practice group (***Exhibit 3-17***). We also see higher non-metropolitan wages for dentists (3%), physical therapists (3%) and pharmacists (1%). In comparison, wages for registered nurses in the non-metropolitan state areas are 8% lower than wages for the metropolitan state areas. For veterinarians the differential is also −8%, for respiratory therapists it is −7% and for occupational therapists it is −3%.

The values in ***Exhibit 3-17*** are un-weighted means computed across the metropolitan and non-metropolitan areas, but employment-weighted differences computed for health care occupations plus occupations in a variety of other professional categories are contained in ***Appendix Table 2***. They tell the same story; with just a few exceptions, higher income for non-metropolitan areas is a unique characteristic of the medical professions.

Again, it is important to note that the BLS earnings data are not adjusted for hours worked. Adjusting for hours worked could affect the observed BLS differences, in particular if rural physicians and other medical professionals work more hours than their urban counterparts, the relative rural wage would fall.

Exhibit 3-17: Rural-urban differences in BLS wages for selected health care professionals, from state special tabulations

Occupation Code and Description	Mean Annual Wage		
	Metro	Non-metro	% Diff
29-1062 Family and General Practice	176,156	178,787	1%
29-1063 General Internists	195,064	205,791	5%
29-1064 Obstetricians and Gynecology	212,619	218,565	3%
29-1067 Surgeons	227,091	228,706	1%
29-1069 Other Physicians and Surgeons	189,512	207,650	10%
29-1021 Dentists, General	163,880	169,296	3%
29-1051 Pharmacists	111,016	111,797	1%
29-1111 Registered Nurses	67,212	61,820	-8%
29-1131 Veterinarians	89,126	81,579	-8%
29-1122 Occupational Therapists	72,216	70,235	-3%
29-1123 Physical Therapists	77,153	79,536	3%
29-1126 Respiratory Therapists	55,059	51,126	-7%

Notes: Table shows un-weighted means across metropolitan and non-metropolitan state areas.

Table shows wage data that was not adjusted for hours worked.

Source: RTI analysis for BLS special tabulations for industry code 29.

Physician and Alternative Non-Physician Indexes

We computed aggregate state metro/non-metro index values for family & general practice and general internal medicine using the specially tabulated data, then constructed similar aggregate indexes for the reference professional occupations and the managerial occupations from the public data using employment-weighted averages. We did not attempt to adjust state-level measures for the effects of training programs.

Examining this data at the individual state level, we did find several states where the rural-urban differentials are more similar to differentials in the other occupation indexes (***Exhibit 3-18***). For example, forty-seven percent of states that had a non-metropolitan index value for family practice, had a lower non-metropolitan value. For the internal medicine index that figure is 39%. While still different from the alternative professional indexes (in which all states show lower values for non-metropolitan areas), this finding clearly shows some heterogeneity in the data, which can be expected to affect how application of a physician-income based physician work adjustment would be received if implemented.

Exhibit 3-18: Rural-urban differences in BLS state aggregate indexes

Index	Value computed over all metro Areas	Value computed over all non-metro areas	Percent Diff	# metro areas in index	# non-metro areas in index	# of states with lower non-metro index	% of states with lower non-metro index
Family & General Practice	0.995	1.029	3%	48	45	21	47%
General Internal Medicine	0.996	1.045	5%	42	33	13	39%
Reference Professional	1.031	0.751	-27%	52	49	49	100%
Managerial	0.938	0.750	-20%	52	49	49	100%

Table shows index values that were computed from wage data that was not adjusted for hours worked.

Source: RTI analysis for BLS special tabulations for industry code 29 and public files for non-health care occupations (May 2011 survey).

Appendix Table 4 includes complete information on aggregate metropolitan and non-metropolitan index values for each state.

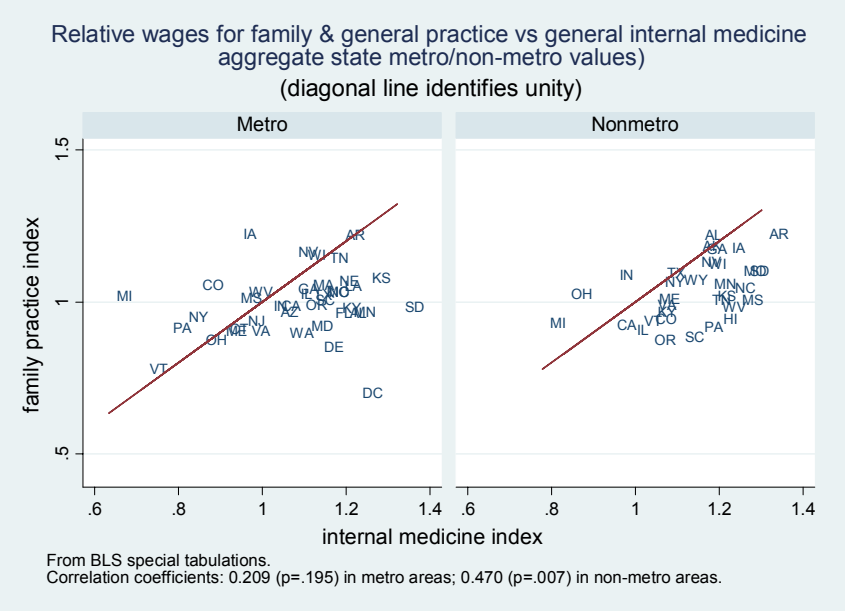
The correlation coefficients across indexes are similar to what we find in the local metropolitan analyses, including even the significant but negative correlations between general internal medicine wages and both of the alternative occupation wages (***Exhibit 3-19***). We were surprised at the relatively low correlation (0.33) between the aggregate family practice and general internal medicine indexes. The relative standard errors on the specially tabulated data are low for both – below 12 percent. On further examination we found that there are still several areas where the difference between the two specialties is large and hard to explain. ***Exhibit 3-20*** is a set of scatter plots for metropolitan and non-metropolitan areas, where the state abbreviation is used as the plot symbol as a way of identifying anomalous areas. For example, in metropolitan Michigan the internal medicine index is quite low while the family medicine index is close to 1.0; in the District of Columbia the opposite is true, where the family medicine index is quite low while the internal medicine index above 1.2. Some of this discordance is sampling error and some may be due to distortions from teaching programs, but the fact that it remains even at the aggregate state metro/non-metro level is discouraging.

Exhibit 3-19: Correlation across BLS indexes from the aggregate state metro/non-metro areas

		Pearson correlation coefficients (all correlations significant at p<.0001)		
	general internal medicine index	family & general practice index	reference index	managerial index
All areas				
general internal medicine index	1 N=75			
family & general practice index	0.3332 p=0.004 N= 72	1 N=94		
reference index	-0.2538 p=0.028 N=75	-0.1166 p=0.263 N=94	1 N=100	
managerial index	-0.2421 p=0.036 N=75	-0.1267 p=0.224 N=94	0.8839 p<.0001 N=100	0.995 p<.0001 N=100

Source: RTI analysis for BLS special tabulations for industry code 29 and public files for non-health care occupations (May 2011 survey).

Exhibit 3-20: Anomalies in the aggregate relative wages for family practice as compared to general internal medicine



Source: RTI analysis of BLS special tabulations.

3.4.4 Results (3): Predicting BLS Physician Wages from Other BLS Wages Series

Model Specification

We constructed two sets of regression models, the first to predict the BLS family & general practice index and the second to predict the general internal medicine index. For each set, separate models were run using the proxy index, the managerial index, and the all-occupation index as the predictor variable of interest. We tested the family & general practice model with and without the computed "percent trainee" measure as an added control variable; although we retained it in the final models for sake of completeness, the percent-trainees variable was not significant and did not alter the coefficients on any of the alternative index variables. We constructed a dummy variable for rural (non-metropolitan) status and a set of dummy variables for regional location, leaving the northeast as the reference group and adding a fifth indicator for Puerto Rico. We tested interaction effects between rural status and the alternative indexes, and between combined rural and regional status and the alternative indexes. Three-way rural interactions were not significant and were dropped from the model, although the rural indicator was retained.

The chief added value of regressions over the correlation analyses is provided by the regional and rural interactions. It should be clear from analyses presented thus far that geographic variation in any of the three alternative indexes does not approximate variation in the two physician specialties for which we have relatively complete data in the BLS-OES. Although the addition of geographic indicators by itself adds predictive power to each of the models, this is not important to the study questions. What we are interested in discovering from the multivariate regressions is whether geographic heterogeneity might be contributing to the lack of association between the wage indexes, such that adding second order geographic terms might uncover positive associations within some areas that are more in tune with expectations based on labor economic theory.

For each model, we ran three specifications:

OLS: $INDEX_{MD} = a + B_1(INDEX_{alternative}) + e$

OLS: $INDEX_{MD} = a + B_1(INDEX_{alternative}) + B_2(INDEX_{alternative} \times REG_i) + B_3(REG_i) + B_4(RUR_i) + e$

WLS: $INDEX_{MD} = a + B_1(INDEX_{alternative}) + B_2(INDEX_{alternative} \times REG_i) + B_3(REG_i) + B_4(RUR_i) + e$

(Where addition of the percent trainee variable is assumed for models on the family & general practice index)

The weighted least squares specification used the relative standard errors published by the BLS for the respective physician wage estimates as weights. Key results for the first and second specifications for each physician index are summarized in ***Exhibit 3-21.*** In the exhibit we present the interacted effects as linear combinations of the coefficients on the main and interacted index variables (p-values are

computed on t-statistics from the combined standard error). Complete regression output tables for all three specifications are available in ***Appendix Tables 7A*** and ***7B.***

Findings

The findings are very similar to what we see in the correlation analyses. In fact, even the perplexing significant negative correlations between the alternative indexes and the general internal medicine index are confirmed.

Exhibit 3-21: Summary regression results

Predictor variables	Dependent Variable: BLS Family & General Practice Index (N=309)		BLS General Internal Medicine Index (N=146)	
	coeff.	p-value	coeff.	p-value
BLS Reference Index				
effect without interactions	-0.083	0.167	**-0.234**	**0.015**
effect with regional interactions:				
in the Northeast	-0.243	0.196	-0.369	0.125
in the Midwest	-0.209	0.161	-0.290	0.264
in the South	**-0.291**	**0.006**	-0.051	0.758
in the West	0.049	0.652	-0.124	0.525
BLS Managerial Index				
effect without interactions	-0.234	0.706	**-0.278**	**0.004**
effect with regional interactions:				
in the Northeast	0.213	0.161	-0.301	0.132
in the Midwest	-0.079	0.670	-0.684	0.023
in the South	-0.183	0.113	-0.079	0.662
in the West	0.034	0.780	-0.188	0.359
BLS All occupations index				
effect without interactions	-0.045	0.491	**-0.297**	**0.002**
effect with regional interactions:				
in the Northeast	0.267	0.121	-0.334	0.142
in the Midwest	-0.021	0.912	-0.342	0.225
in the South	**-0.303**	**0.013**	-0.133	0.448
in the West	0.036	0.778	-0.115	0.576

Notes: Statistically significant results (p<.05)are shown in boldface. All estimations use ordinary least squares regression. All models for the family & general practice index include a control variation for the estimate of trainees percent of survey physicians by area. Effects with regional interactions are from linear combinations of the coefficier and standard errors on the main and interaction terms. See ***Appendix Tables 7A*** and ***7B*** for further details.

Source: RTI analysis of BLS data.

For family medicine & general practice, none of the three possible alternative indexes is a significant predictor in the simplest specification, and the model R-squared values for each are close to zero. With added location variables and regional effects, the models pick up predictive power (R-squared values are between 0.12 and 0.14, as seen in the ***Appendix Tables 7A*** and ***7B***). But the only interacted index effects that are significant are in the south, and both of these are negative (−0.291, p= .006 on the reference professional index, and −0.303, p=.013 on the all-occupation index). In the three expanded specifications, the reference professional index has slightly higher predictive power than the other two alternative indexes, but the R-squared values are very similar across all three. Rural effects were not significant in any model. The weighted regression results are not presented in this exhibit, but as can be seen in the ***Appendix Tables 7A*** and ***7B***, their coefficients are similar in direction and significance to those in the un-weighted regression, and are slightly stronger.

For general internal medicine, all three of the possible alternative indexes are significant but negative predictors in the first and simplest specification. The coefficient is slightly more negative for the managerial and all-occupations indexes than for the reference professional index. Rural effects were not significant in any of the specifications, nor were the main regional effects. Although adding location variables improves predictive power for each equation (as seen in ***Appendix Tables 7A*** and ***7B***), in the un-weighted specification none of the interacted effects is individually significant. In the weighted regressions (see appendix tables) the interacted index effects are significant and even more negative for all three alternative indexes in the northeast (the excluded category). The all-occupation index and the managerial index explain slightly more of the variance in the internal medicine index than does the reference professional index (see ***Appendix Tables 7A*** and ***7B***).

While the regression models shed some light on regional differences in the relationship between relative physician wages and the reference index or other possible alternative indexes, it is difficult to know what to make of the inverse correlations that are evident in at least some regions. What seems clear is that a work GPCI based on the reference professional index is adjusting physician payments in a way that is at best unrelated, and at worst contrary to, geographic patterns of physician wage variation as captured by the BLS data. At the very least, we can say with some confidence that the coefficients in these regressions cannot be used to estimate a partial adjustment, as hoped for by the IOM committee.

3.5 Analysis of MGMA Data

The MGMA physician compensation data were not used for similar empirical analyses. In the two sections that follow we describe the data in detail and summarize our findings, but substantial gaps in the geographic coverage made it impossible for us to use the information in any modeling.

3.5.1 Overview and Methods

We obtained data from the 2012 release of the MGMA physician compensation survey through MedPAC's license with that organization. At our request, MGMA staff downloaded data directly into excel files for analysis. We requested data for the following specialties:

- Family Medicine

- General Internal Medicine
- General Surgery
- Cardiology
- Ophthalmology
- Radiology

The data items provided to us included:

- Number of MD respondents
- Number of practices
- Compensation per RVU
  - Mean
  - Standard deviation
  - Percentile distributions (10^{th}, 25^{th}, 50^{th}, 75^{th} and 90^{th})

Where available, we requested that the measures be aggregated t the following geographic levels:

- National
- National by metropolitan and non-metropolitan status
- Regional
- Regional by metropolitan and non-metropolitan status
- State
- State by metropolitan and non-metropolitan status

We also requested two versions of each file, one for responses from physicians identified as non-partners, and one for responses from all physicians. Due to small numbers of non-partner data, however, the files included only a single state-level file for responses from non-partners. We used this state-level aggregation to review the differences between non-partner and all-respondent data, but all of our exhibits are based on all-respondent compensation. Although we were disappointed at not being able to use non-partner compensation in the analyses, a review of the two compensation series at the state level revealed many very large differentials between partner and non-partner income going in both directions (see ***Appendix Table 6A***). In some instances state average non-partner compensation was higher than state average all-respondent income, implying that partner-owners earned less than employed physicians. This unexpected finding, coupled with the small number of practices reporting non-partner compensation, suggested possible sample bias in the non-partner data.

The files as received included all of our requested geographic levels of aggregation, but reported empty cells whenever there were no responses for a given specialty in a given geographic area, or if the number of responding physicians or practices did not meet the minimum criteria as described in Section 3.3.2. With respect to specialty reporting, the MGMA survey reports distinguish several different sub-groups within each specialty, and the agency does not publish equivalent aggregate data for the specialty. This adds to the survey's sample size problems. Although we could aggregate data on mean compensation (for example, combining interventional and non-interventional cardiology), this sacrifices information on standard deviation and percentile distributions We aggregated the cardiology data, to obtain better geographic representation, but data on radiologists were split across too many groups to be usable, so this specialty was dropped from our analyses.

We used the mean and median compensation figures to compute index values for each of the remaining specialties, centering each index on the national mean and median values provided in the file.

3.5.2 Results

As shown in the next three exhibits, local compensation data were incomplete for all of the specialties. The data for family medicine and general internal medicine were the most complete, but even here we were able to construct state metropolitan and non-metropolitan indexes for only nine states. In some non-metropolitan areas the number of responding practices (as distinct from responding physicians) is especially low. There are also several large states that are not represented in the data at all – this could be because no area practices responded to the survey or it could be that practices in some areas (or some specialties) responded but did not complete the required RVU information to generate a measure for compensation per RVU.

Exhibit 3-22 identifies the nine states for which we have data at the metropolitan and non-metropolitan level for at least two of our five requested specialties. The exhibit includes information on number of responding physicians and practices, and the index value as computed from mean wages. ***Appendix Table 7B*** contains similar information by specialty for all of the remaining states.

In the absence of state-level data, we turned to regional metropolitan/ non-metropolitan files. ***Exhibit 3-23*** provides the same information, but at the level of the MGMA regions. These are similar to census division classifications, though not quite overlapping. There are many areas with missing data at the region level, and many areas where the mean compensation is available, but has been computed from a very small number of practices.

Exhibit 3-22: State-level MGMA indexes, by specialty and metropolitan status, for areas where mean compensation per RVU was available

Location		Family Med (no OB)		Gen Internal Med		Cardiology (all)		Ophthalmology		General Surgery	
		Metro	Non-Metro	Metro	Non-Metro	Metro	Non-Metro	Metro	Non-Metro	Metro	Non-Metro
Illinois	# responses	111	6	207	24	46	0	11	1	14	4
	# practices	13	3	11	3	8	0	4	1	6	2
	Index	0.873		0.954	0.918	0.902		1.003		0.798	
Kansas	# responses	72	9	117	24	10	0	3	5	16	9
	# practices	4	2	5	4	3	0	2	3	4	5
	Index	0.860		0.843	1.008	1.153				0.870	
Michigan	# responses	26	12	37	33	0	0		1	4	5
	# practices	5	5	6	6	0	0		1	2	2
	Index	0.885	1.017	0.775	0.917						
Minnesota	# responses	222	16	401	49	23	0	26	5	73	11
	# practices	9	6	9	7	3	0	6	3	9	4
	Index	1.050	1.041	1.044	1.309	1.598		1.108		0.984	1.084
Missouri	# responses	71	4	146	28	15	0	5		25	1
	# practices	17	1	30	17	5	0	1		4	1
	Index	0.984		0.981	1.080	2.329				0.867	
Ohio	# responses	154	24	127	63	71	0	7	4	18	15
	# practices	7	6	28	13	13	0	2	2	4	6
	Index	0.863	0.853	0.907	0.723	0.826				0.906	0.886
Pennsylvania	# responses	79	31	166	171	43	13	6	6	20	14
	# practices	10	16	20	53	10	4	3	3	5	8
	Index	1.087	0.825	0.889	0.943	1.085	0.818			0.992	0.915
Washington	# responses	164	11	279	14	33	0	25		90	
	# practices	17	4	20	6	12	0	7		14	
	Index	0.917	0.988	0.977	1.073	0.905		0.932		1.079	
Wisconsin	# responses	168	54	226	108	34	0	22	13	34	35
	# practices	7	5	8	9	8	0	5	2	6	8
	Index	1.062	1.029	1.022	1.135	1.119		1.188		1.111	1.081

Source: RTI analysis of MGMA special tabulations from 2012 physician compensation survey.

Exhibit 3-23: Region-level MGMA indexes, by specialty and metropolitan status

Location		Family Med		Gen Internal Medicine		Cardiology		Ophthalmology		General Surgery	
		Metro	Non-Metro	Metro	Non-Metro	Metro	Non-Metro	Metro	Non-Metro	Metro	Non-Metro
California/	# responses	288	1	208	2	54	0	20		43	3
Alaska/Hawaii	# practices	18	1	15	2	17	0	6		13	2
	Index	1.107		1.023		0.951		0.948		1.010	
Eastern_Midwest	# responses	565	124	381	54	193	11	33	6	53	30
	# practices	55	26	35	18	46	6	11	4	18	14
	Index	0.924	0.829	0.855	0.905	0.824	0.952	1.044		0.847	0.923
Lower_Midwest	# responses	561	60	350	18	226	0	26	6	81	11
	# practices	55	23	39	5	54	0	12	4	20	7
	Index	0.976	0.987	0.984	0.939	1.111		1.020		0.870	1.015
Mid_Atlantic	# responses	132	6	36	1	30	0			55	4
	# practices	6	4	5	1	10	0			7	2
	Index	0.759		0.949		0.833				0.779	
North_Atlantic	# responses	215	176	199	58	85	27	9	9	26	21
	# practices	28	55	16	20	22	6	5	4	9	10
	Index	0.918	0.944	1.089	1.005	0.959	1.200			0.949	1.124
Northeast	# responses	27	22	220	22	24	0	19		16	6
	# practices	5	4	6	3	4	0	3		4	3
	Index	2.268	1.047	1.048	1.106	0.971		0.845		0.856	
Northwest	# responses	398	20	247	22	88	0	36	3	131	2
	# practices	29	9	26	6	29	0	10	1	20	1
	Index	0.983	1.068	0.941	0.950	0.897		0.910		1.127	
Rocky_Mountain	# responses	312	16	201	17	103	0	7		75	6
	# practices	18	2	12	4	26	0	4		9	3
	Index	0.925		1.022	1.849	1.106				1.085	
Southeast	# responses	368	175	396	101	257	44	30	5	80	35
	# practices	81	8	53	6	41	11	4	3	21	6
	Index	1.003	0.952	1.021	0.890	0.859	0.917	0.953		0.851	0.939
Upper_Midwest	# responses	914	193	547	86	158	0	61	18	191	54
	# practices	27	20	29	14	44	0	16	5	27	15
	Index	1.014	1.258	1.050	1.038	1.341		1.130	0.982	1.046	1.143
National	# responses	3780	793	2785	381	1258	164	241	48	751	172
	# practices	322	152	236	79	314	59	71	21	148	63
	Index	0.695	1.017	0.9986	1.005	0.995	1.019	0.993	1.025	0.981	1.061

Source: RTI analysis of MGMA special tabulations from 2012 physician compensation survey.

While the construction of the compensation measure in this survey has several advantages over the BLS measures, the small number of responding practices raises problems for generalizability. At this time, therefore, the MGMA data cannot be used to assess either BLS physician wage data or the validity of the reference professional index as the source for the work GPCI. We do note, however, one important finding for the specialties and areas on which we are able to construct a compensation index: the MGMA surveys for these specialties also show higher compensation per RVU in non-metropolitan areas than in metropolitan areas. This is shown in ***Exhibit 3-24***, which summarizes by specialty. It is important to stress that these are un-weighted aggregates—there is not a systematic sampling frame for this survey and thus no survey weights, and this exhibit shows un-weighted mean differences across the areas available for comparison. But higher non-metropolitan index values are also the prevailing pattern in the detail in ***Exhibits 3-22*** and ***3-23***, and in the national rural and urban files provided to us, aggregate mean compensation per RVU was slightly higher for non-metropolitan areas for most of the specialties requested.

Exhibit 3-24: Aggregate rural-urban differentials in MGMA indexes, by specialty

Specialty		State metropolitan	State non-metropolitan	% Diff
Primary Care (all)	# responses	9206	1528	
	# practices	786	301	
	Index	0.982	0.962	-2%
Family Medicine only	# responses	3780	793	
	# practices	322	152	
	Index	0.985	1.017	3%
General Internal Medicine only	# responses	2785	381	
	# practices	236	79	
	Index	0.999	1.005	1%
Cardiology (all)	# responses	1258	164	
	# practices	314	59	
	Index	0.995	1.019	2%
Ophthalmology	# responses	241	47	
	# practices	71	21	
	Index	0.993	1.025	3%
General Surgery	# responses	751	172	
	# practices	148	63	
	Index	0.981	1.061	8%

Source: RTI analysis of MGMA special tabulations from 2012 physician compensation survey.

3.6 Discussion

3.6.1 Limitations of the Data

Every survey source for physician income has drawbacks when the objective is to capture geographic variation. We confined most of our analyses to the BLS data because these are the most comprehensive in terms of geographic coverage and the most generalizable. Even so, they are sufficiently limited in sample size that most of the individual specialty series could not be used due to missing data at the local area level. BLS data are also problematic because they do not including benefits, the responses are censored in the upper income levels, and the sample population includes wages for post-graduate trainees (residents and fellows). As described in Section 3.3.1 the BLS does perform some imputations for wages reported in that highest income bracket (based on data from another survey), it is still likely to depress the mean wage values for the higher-paid specialties in the higher-cost areas. Including wages for residents and fellows also has an effect of depressing mean wages, at least in areas where residents could make up a non-negligible portion of the sample. We attempted to correct for this using actual resident trainee data by area, but were not able to accurately measure residents and fellows as a proportion of BLS employment. We do not think that our trainee-adjusted wage provides a valid correction for areas where the local mean wage has been distorted by including residents and fellows.

Even with perfect physician data, there would be a remaining empirical difficulty posed by using physician income as a source for the work GPCI. To avoid introducing a form of "specialty mix" bias into our physician wage indexes, it is necessary to construct separate indexes by specialty. If geographic variation in one specialty is significantly different from variation in another (a plausible expectation – we noticed that even for our two primary care indexes, which we might expected to be highly correlated, were only modestly correlated). How would a single work GPCI account for this?

3.6.2 Relationship to Previous Findings

Reschovsky and Staiti do not find that physician wages are higher in urban areas relative to rural areas. Similarly, our analysis of the BLS family and general practice data showed little regional or rural-urban variation, and higher rural wages for the general internists. Thus, although higher wages in nonmetropolitan areas are not expected based on theory, our unexpected findings from the BLS data are consistent with findings based on a different survey data and taking a different analytic approach. Our BLS OES findings are not adjusted for hours worked, but the Reschovsky and Staiti analysis did control for hours worked.

While, Gillis, Willke, and Reynolds find that physician hourly wage differences can be captured best by the one-quarter work GPCI, our regression analysis does not come to this conclusion. There are some significant differences between the two study designs that may shed light on the different conclusions. First, the unit of analysis used is different, because observations in the model used by Gillis *et al* model are for individual physician responses, and many of the control variables are similarly measured at the individual physician level. Our model uses only grouped physician data, and is unable to control for individual physician characteristics such as experience and training. Another difference is geographic level; the independent variable of interest in Gillis et al is the work GPCI measured at the 89 Medicare payment localities, whereas our model uses the reference professional index computed at the level of BLS metropolitan and state non-metropolitan areas.

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Appendices

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
Architecture and Engineering			
17-1011	Architects, Except Landscape and Naval	$79,300	0.4%
17-1012	Landscape Architects	$66,520	0.1%
17-1021	Cartographers and Photogrammetrists	$60,110	0.1%
17-1022	Surveyors	$58,740	0.2%
17-2011	Aerospace Engineers	$103,870	0.4%
17-2021	Agricultural Engineers	$78,400	0.0%
17-2031	Biomedical Engineers	$88,360	0.1%
17-2041	Chemical Engineers	$99,440	0.1%
17-2051	Civil Engineers	$82,710	1.2%
17-2061	Computer Hardware Engineers	$101,360	0.3%
17-2071	Electrical Engineers	$89,200	0.7%
17-2072	Electronics Engineers, Except Computer	$94,670	0.7%
17-2081	Environmental Engineers	$83,340	0.2%
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	$78,540	0.1%
17-2112	Industrial Engineers	$79,840	1.0%
17-2121	Marine Engineers and Naval Architects	$91,730	0.0%
17-2131	Materials Engineers	$86,790	0.1%
17-2141	Mechanical Engineers	$83,550	1.1%
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	$90,070	0.0%
17-2161	Nuclear Engineers	$105,160	0.1%
17-2171	Petroleum Engineers	$138,980	0.1%
17-2199	Engineers, All Other	$92,260	0.6%
17-3031	Surveying and Mapping Technicians	$42,050	0.2%
Computer, Mathematical, Life and Physical Science			
15-1111	Computer and Information Research Scientists	$103,160	0.1%
15-1121	Computer Systems Analysts	$82,320	2.3%
15-1131	Computer Programmers	$76,010	1.5%
15-1132	Software Developers, Applications	$92,080	2.6%
15-1133	Software Developers, Systems Software	$100,420	1.9%

(continued)

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
15-1141	Database Administrators	$77,350	0.5%
15-1142	Network and Computer Systems Administrators	$74,270	1.6%
15-1150	Computer Support Specialists	$51,820	3.0%
15-1179	Information Security Analysts, Web Developers, and Computer Network Architects	$81,670	1.3%
15-1799	Computer Occupations, All Other*	$80,500	0.9%
15-2011	Actuaries	$103,000	0.1%
15-2021	Mathematicians	$101,320	0.0%
15-2031	Operations Research Analysts	$78,840	0.3%
15-2041	Statisticians	$77,280	0.1%
15-2091	Mathematical Technicians	$50,910	0.0%
15-2099	Mathematical Science Occupations, All Other	$63,170	0.0%
19-1011	Animal Scientists	$74,170	0.0%
19-1012	Food Scientists and Technologists	$64,170	0.1%
19-1013	Soil and Plant Scientists	$63,890	0.1%
19-1021	Biochemists and Biophysicists	$87,640	0.1%
19-1022	Microbiologists	$71,720	0.1%
19-1023	Zoologists and Wildlife Biologists	$61,880	0.1%
19-1029	Biological Scientists, All Other	$73,050	0.2%
19-1031	Conservation Scientists	$62,290	0.1%
19-1032	Foresters	$56,130	0.0%
19-1041	Epidemiologists	$69,660	0.0%
19-1042	Medical Scientists, Except Epidemiologists	$87,640	0.5%
19-2011	Astronomers	$101,630	0.0%
19-2012	Physicists	$112,090	0.1%
19-2021	Atmospheric and Space Scientists	$90,860	0.0%
19-2031	Chemists	$74,780	0.4%
19-2032	Materials Scientists	$86,600	0.0%
19-2041	Environmental Scientists and Specialists, Including Health	$68,810	0.4%
19-2042	Geoscientists, Except Hydrologists and Geographers	$97,700	0.2%
19-2043	Hydrologists	$79,070	0.0%
19-2099	Physical Scientists, All Other	$96,290	0.1%

(continued)

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
Social Science, Community and Social Service, and Legal			
19-3011	Economists	$100,270	0.1%
19-3022	Survey Researchers	$47,740	0.1%
19-3031	Clinical, Counseling, and School Psychologists	$73,090	0.5%
19-3032	Industrial-Organizational Psychologists	$124,160	0.0%
19-3039	Psychologists, All Other	$85,830	0.1%
19-3041	Sociologists	$79,460	0.0%
19-3051	Urban and Regional Planners	$67,350	0.2%
19-3091	Anthropologists and Archeologists	$59,040	0.0%
19-3092	Geographers	$74,170	0.0%
19-3093	Historians	$57,610	0.0%
19-3094	Political Scientists	$105,040	0.0%
19-3099	Social Scientists and Related Workers, All Other	$78,670	0.2%
19-4011	Agricultural and Food Science Technicians	$36,150	0.1%
19-4021	Biological Technicians	$42,290	0.3%
19-4031	Chemical Technicians	$44,560	0.3%
19-4041	Geological and Petroleum Technicians	$57,840	0.1%
19-4051	Nuclear Technicians	$67,520	0.0%
19-4061	Social Science Research Assistants	$42,410	0.1%
19-4091	Environmental Science and Protection Technicians, Including Health	$45,270	0.1%
19-4092	Forensic Science Technicians	$55,660	0.1%
19-4093	Forest and Conservation Technicians	$37,460	0.1%
19-4099	Life, Physical, and Social Science Technicians, All Other	$45,770	0.3%
Community and Social Service			
21-1011	Substance Abuse and Behavioral Disorder Counselors	$41,030	0.4%
21-1012	Educational, Guidance, School, and Vocational Counselors	$56,540	1.2%
21-1013	Marriage and Family Therapists	$48,710	0.2%
21-1014	Mental Health Counselors	$42,590	0.5%
21-1015	Rehabilitation Counselors	$37,070	0.5%

(continued)

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
21-1019	Counselors, All Other	$44,850	0.1%
21-1021	Child, Family, and School Social Workers	$44,410	1.3%
21-1022	Healthcare Social Workers	$50,500	0.6%
21-1023	Mental Health and Substance Abuse Social Workers	$42,650	0.6%
21-1029	Social Workers, All Other	$54,220	0.3%
21-1091	Health Educators	$52,150	0.3%
21-1092	Probation Officers and Correctional Treatment Specialists	$52,110	0.4%
21-1093	Social and Human Service Assistants	$30,710	1.7%
21-2011	Clergy	$48,490	0.2%
21-2021	Directors, Religious Activities and Education	$41,690	0.1%
21-2099	Religious Workers, All Other	$31,600	0.0%
Legal			
23-1011	Lawyers	$130,490	2.7%
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	$88,340	0.1%
23-1022	Arbitrators, Mediators, and Conciliators	$75,550	0.0%
23-1023	Judges, Magistrate Judges, and Magistrates	$110,940	0.1%
23-2011	Paralegals and Legal Assistants*	$49,960	1.2%
23-2091	Court Reporters	$53,710	0.1%
23-2093	Title Examiners, Abstractors, and Searchers	$44,850	0.2%
23-2099	Legal Support Workers, All Other	$60,070	0.2%
Education, Training, and Library			
25-1011	Business Teachers, Postsecondary	$86,620	0.4%
25-1021	Computer Science Teachers, Postsecondary	$80,460	0.2%
25-1022	Mathematical Science Teachers, Postsecondary	$74,460	0.3%
25-1031	Architecture Teachers, Postsecondary	$79,600	0.0%
25-1032	Engineering Teachers, Postsecondary	$97,260	0.2%
25-1041	Agricultural Sciences Teachers, Postsecondary	$83,480	0.0%
25-1042	Biological Science Teachers, Postsecondary	$86,060	0.2%
25-1043	Forestry and Conservation Science Teachers, Postsecondary	$82,640	0.0%

(continued)

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	$91,350	0.1%
25-1052	Chemistry Teachers, Postsecondary	$80,450	0.1%
25-1053	Environmental Science Teachers, Postsecondary	$84,140	0.0%
25-1054	Physics Teachers, Postsecondary	$86,730	0.1%
25-1061	Anthropology and Archeology Teachers, Postsecondary	$81,860	0.0%
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	$79,840	0.0%
25-1063	Economics Teachers, Postsecondary	$94,450	0.1%
25-1064	Geography Teachers, Postsecondary	$72,300	0.0%
25-1065	Political Science Teachers, Postsecondary	$80,980	0.1%
25-1066	Psychology Teachers, Postsecondary	$74,890	0.2%
25-1067	Sociology Teachers, Postsecondary	$73,320	0.1%
25-1069	Social Sciences Teachers, Postsecondary, All Other	$82,750	0.0%
25-1071	Health Specialties Teachers, Postsecondary	$99,210	0.7%
25-1072	Nursing Instructors and Teachers, Postsecondary	$67,810	0.3%
25-1081	Education Teachers, Postsecondary	$65,050	0.3%
25-1082	Library Science Teachers, Postsecondary	$69,870	0.0%
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	$65,690	0.1%
25-1112	Law Teachers, Postsecondary	$108,760	0.1%
25-1113	Social Work Teachers, Postsecondary	$71,030	0.0%
25-1121	Art, Drama, and Music Teachers, Postsecondary	$72,660	0.4%
25-1122	Communications Teachers, Postsecondary	$67,560	0.1%
25-1123	English Language and Literature Teachers, Postsecondary	$68,760	0.3%
25-1124	Foreign Language and Literature Teachers, Postsecondary	$66,720	0.1%
25-1125	History Teachers, Postsecondary	$72,200	0.1%
25-1126	Philosophy and Religion Teachers, Postsecondary	$71,620	0.1%
25-1191	Graduate Teaching Assistants	$33,180	0.5%
25-1192	Home Economics Teachers, Postsecondary	$68,080	0.0%
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	$63,820	0.1%

(continued)

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
25-1194	Vocational Education Teachers, Postsecondary	$53,480	0.6%
25-1199	Postsecondary Teachers, All Other	$74,360	0.9%
25-2011	Preschool Teachers, Except Special Education	$30,150	1.7%
25-2012	Kindergarten Teachers, Except Special Education	$52,350	0.8%
25-2021	Elementary School Teachers, Except Special Education	$55,270	6.8%
25-2022	Middle School Teachers, Except Special and Career/Technical Education	$55,780	3.1%
25-2023	Career/Technical Education Teachers, Middle School	$56,100	0.1%
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	$56,760	4.8%
25-2032	Career/Technical Education Teachers, Secondary School	$56,330	0.4%
25-2041	Special Education Teachers, Preschool, Kindergarten, and Elementary School*	$56,460	1.1%
25-2053	Special Education Teachers, Middle School	$58,420	0.5%
25-2054	Special Education Teachers, Secondary School	$59,080	0.6%
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	$51,350	0.3%
25-3021	Self-Enrichment Education Teachers	$41,070	0.8%
25-3999	Teachers and Instructors, All Other*	$37,260	4.0%
25-4011	Archivists	$50,140	0.0%
25-4012	Curators	$53,540	0.0%
25-4013	Museum Technicians and Conservators	$42,450	0.1%
25-4021	Librarians	$57,020	0.7%
25-4031	Library Technicians	$32,070	0.5%
25-9011	Audio-Visual and Multimedia Collections Specialists	$46,990	0.0%
25-9021	Farm and Home Management Advisors	$47,510	0.1%
25-9031	Instructional Coordinators	$61,720	0.6%
25-9041	Teacher Assistants	$25,270	5.8%
25-9099	Education, Training, and Library Workers, All Other	$41,040	0.5%

(continued)

Appendix Table 1A: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
Arts and Entertainment			
27-1011	Art Directors	$95,500	0.1%
27-1012	Craft Artists	$32,270	0.0%
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	$53,400	0.1%
27-1014	Multimedia Artists and Animators	$68,060	0.1%
27-1019	Artists and Related Workers, All Other	$61,520	0.0%
27-1021	Commercial and Industrial Designers	$63,570	0.1%
27-1022	Fashion Designers	$73,930	0.1%
27-1023	Floral Designers	$25,350	0.2%
27-1024	Graphic Designers	$48,690	0.9%
27-1025	Interior Designers	$52,810	0.2%
27-1026	Merchandise Displayers and Window Trimmers	$28,500	0.3%
27-1027	Set and Exhibit Designers	$54,890	0.0%
27-1029	Designers, All Other	$51,640	0.0%
Pharmacists			
29-1051	Pharmacists	$112,160	1.3%
Registered Nurses			
29-1111	Registered Nurses*	$69,110	13.1%

Appendix Table 1B: Component Occupations in the Reference Professional Occupation Index

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
29-1111	Registered Nurses*	$69,110	13.1%
25-2021	Elementary School Teachers, Except Special Education	$55,270	6.8%
25-9041	Teacher Assistants	$25,270	5.8%
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	$56,760	4.8%
25-3999	Teachers and Instructors, All Other*	$37,260	4.0%
25-2022	Middle School Teachers, Except Special and Career/Technical Education	$55,780	3.1%
15-1150	Computer Support Specialists	$51,820	3.0%
23-1011	Lawyers	$130,490	2.7%
15-1132	Software Developers, Applications	$92,080	2.6%
15-1121	Computer Systems Analysts	$82,320	2.3%
15-1133	Software Developers, Systems Software	$100,420	1.9%
21-1093	Social and Human Service Assistants	$30,710	1.7%
25-2011	Preschool Teachers, Except Special Education	$30,150	1.7%
15-1142	Network and Computer Systems Administrators	$74,270	1.6%
15-1131	Computer Programmers	$76,010	1.5%
21-1021	Child, Family, and School Social Workers	$44,410	1.3%
15-1179	Information Security Analysts, Web Developers, and Computer Network Architects	$81,670	1.3%
29-1051	Pharmacists	$112,160	1.3%
17-2051	Civil Engineers	$82,710	1.2%
23-2011	Paralegals and Legal Assistants*	$49,960	1.2%
21-1012	Educational, Guidance, School, and Vocational Counselors	$56,540	1.2%
17-2141	Mechanical Engineers	$83,550	1.1%
25-2041	Special Education Teachers, Preschool, Kindergarten, and Elementary School*	$56,460	1.1%
17-2112	Industrial Engineers	$79,840	1.0%
27-1024	Graphic Designers	$48,690	0.9%
25-1199	Postsecondary Teachers, All Other	$74,360	0.9%
15-1799	Computer Occupations, All Other*	$80,500	0.9%
25-3021	Self-Enrichment Education Teachers	$41,070	0.8%
25-2012	Kindergarten Teachers, Except Special Education	$52,350	0.8%

(continued)

Appendix Table 1B: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
17-2071	Electrical Engineers	$89,200	0.7%
25-1071	Health Specialties Teachers, Postsecondary	$99,210	0.7%
25-4021	Librarians	$57,020	0.7%
17-2072	Electronics Engineers, Except Computer	$94,670	0.7%
21-1022	Healthcare Social Workers	$50,500	0.6%
25-2054	Special Education Teachers, Secondary School	$59,080	0.6%
25-9031	Instructional Coordinators	$61,720	0.6%
17-2199	Engineers, All Other	$92,260	0.6%
25-1194	Vocational Education Teachers, Postsecondary	$53,480	0.6%
21-1023	Mental Health and Substance Abuse Social Workers	$42,650	0.6%
21-1014	Mental Health Counselors	$42,590	0.5%
21-1015	Rehabilitation Counselors	$37,070	0.5%
25-1191	Graduate Teaching Assistants	$33,180	0.5%
15-1141	Database Administrators	$77,350	0.5%
25-4031	Library Technicians	$32,070	0.5%
25-9099	Education, Training, and Library Workers, All Other	$41,040	0.5%
19-3031	Clinical, Counseling, and School Psychologists	$73,090	0.5%
25-2053	Special Education Teachers, Middle School	$58,420	0.5%
19-1042	Medical Scientists, Except Epidemiologists	$87,640	0.5%
25-1121	Art, Drama, and Music Teachers, Postsecondary	$72,660	0.4%
21-1092	Probation Officers and Correctional Treatment Specialists	$52,110	0.4%
25-2032	Career/Technical Education Teachers, Secondary School	$56,330	0.4%
17-1011	Architects, Except Landscape and Naval	$79,300	0.4%
19-2041	Environmental Scientists and Specialists, Including Health	$68,810	0.4%
25-1011	Business Teachers, Postsecondary	$86,620	0.4%
19-2031	Chemists	$74,780	0.4%
17-2011	Aerospace Engineers	$103,870	0.4%
21-1011	Substance Abuse and Behavioral Disorder Counselors	$41,030	0.4%
25-1123	English Language and Literature Teachers, Postsecondary	$68,760	0.3%
19-4021	Biological Technicians	$42,290	0.3%
17-2061	Computer Hardware Engineers	$101,360	0.3%
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	$51,350	0.3%
27-1026	Merchandise Displayers and Window Trimmers	$28,500	0.3%

(continued)

Appendix Table 1B: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
15-2031	Operations Research Analysts	$78,840	0.3%
25-1081	Education Teachers, Postsecondary	$65,050	0.3%
21-1029	Social Workers, All Other	$54,220	0.3%
19-4031	Chemical Technicians	$44,560	0.3%
19-4099	Life, Physical, and Social Science Technicians, All Other	$45,770	0.3%
21-1091	Health Educators	$52,150	0.3%
25-1072	Nursing Instructors and Teachers, Postsecondary	$67,810	0.3%
25-1022	Mathematical Science Teachers, Postsecondary	$74,460	0.3%
17-2081	Environmental Engineers	$83,340	0.2%
25-1042	Biological Science Teachers, Postsecondary	$86,060	0.2%
23-2093	Title Examiners, Abstractors, and Searchers	$44,850	0.2%
17-3031	Surveying and Mapping Technicians	$42,050	0.2%
27-1023	Floral Designers	$25,350	0.2%
23-2099	Legal Support Workers, All Other	$60,070	0.2%
21-2011	Clergy	$48,490	0.2%
17-1022	Surveyors	$58,740	0.2%
27-1025	Interior Designers	$52,810	0.2%
19-3051	Urban and Regional Planners	$67,350	0.2%
25-1066	Psychology Teachers, Postsecondary	$74,890	0.2%
21-1013	Marriage and Family Therapists	$48,710	0.2%
25-1032	Engineering Teachers, Postsecondary	$97,260	0.2%
25-1021	Computer Science Teachers, Postsecondary	$80,460	0.2%
19-2042	Geoscientists, Except Hydrologists and Geographers	$97,700	0.2%
19-1029	Biological Scientists, All Other	$73,050	0.2%
19-3099	Social Scientists and Related Workers, All Other	$78,670	0.2%
17-2171	Petroleum Engineers	$138,980	0.1%
27-1011	Art Directors	$95,500	0.1%
19-4093	Forest and Conservation Technicians	$37,460	0.1%
19-4091	Environmental Science and Protection Technicians, Including Health	$45,270	0.1%
25-1122	Communications Teachers, Postsecondary	$67,560	0.1%
25-1124	Foreign Language and Literature Teachers, Postsecondary	$66,720	0.1%
27-1021	Commercial and Industrial Designers	$63,570	0.1%
27-1014	Multimedia Artists and Animators	$68,060	0.1%

(continued)

Appendix Table 1B: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
17-2041	Chemical Engineers	$99,440	0.1%
21-1019	Counselors, All Other	$44,850	0.1%
23-1023	Judges, Magistrate Judges, and Magistrates	$110,940	0.1%
19-4061	Social Science Research Assistants	$42,410	0.1%
19-2099	Physical Scientists, All Other	$96,290	0.1%
15-1111	Computer and Information Research Scientists	$103,160	0.1%
19-1021	Biochemists and Biophysicists	$87,640	0.1%
15-2041	Statisticians	$77,280	0.1%
25-1125	History Teachers, Postsecondary	$72,200	0.1%
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	$78,540	0.1%
17-2131	Materials Engineers	$86,790	0.1%
25-1126	Philosophy and Religion Teachers, Postsecondary	$71,620	0.1%
25-1052	Chemistry Teachers, Postsecondary	$80,450	0.1%
15-2011	Actuaries	$103,000	0.1%
19-1031	Conservation Scientists	$62,290	0.1%
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	$63,820	0.1%
23-2091	Court Reporters	$53,710	0.1%
17-2161	Nuclear Engineers	$105,160	0.1%
19-1023	Zoologists and Wildlife Biologists	$61,880	0.1%
19-1022	Microbiologists	$71,720	0.1%
21-2021	Directors, Religious Activities and Education	$41,690	0.1%
25-1065	Political Science Teachers, Postsecondary	$80,980	0.1%
25-1067	Sociology Teachers, Postsecondary	$73,320	0.1%
19-4011	Agricultural and Food Science Technicians	$36,150	0.1%
19-3022	Survey Researchers	$47,740	0.1%
25-2023	Career/Technical Education Teachers, Middle School	$56,100	0.1%
17-2031	Biomedical Engineers	$88,360	0.1%
19-2012	Physicists	$112,090	0.1%
27-1022	Fashion Designers	$73,930	0.1%
17-1012	Landscape Architects	$66,520	0.1%
25-1112	Law Teachers, Postsecondary	$108,760	0.1%
19-4041	Geological and Petroleum Technicians	$57,840	0.1%
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	$65,690	0.1%

(continued)

Appendix Table 1B: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	$88,340	0.1%
19-3011	Economists	$100,270	0.1%
25-1054	Physics Teachers, Postsecondary	$86,730	0.1%
25-1063	Economics Teachers, Postsecondary	$94,450	0.1%
19-4092	Forensic Science Technicians	$55,660	0.1%
19-1012	Food Scientists and Technologists	$64,170	0.1%
19-1013	Soil and Plant Scientists	$63,890	0.1%
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	$53,400	0.1%
17-1021	Cartographers and Photogrammetrists	$60,110	0.1%
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	$91,350	0.1%
19-3039	Psychologists, All Other	$85,830	0.1%
25-9021	Farm and Home Management Advisors	$47,510	0.1%
25-4013	Museum Technicians and Conservators	$42,450	0.1%
25-4012	Curators	$53,540	0.0%
25-1041	Agricultural Sciences Teachers, Postsecondary	$83,480	0.0%
25-1113	Social Work Teachers, Postsecondary	$71,030	0.0%
19-2021	Atmospheric and Space Scientists	$90,860	0.0%
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	$79,840	0.0%
25-1069	Social Sciences Teachers, Postsecondary, All Other	$82,750	0.0%
19-1032	Foresters	$56,130	0.0%
25-9011	Audio-Visual and Multimedia Collections Specialists	$46,990	0.0%
27-1027	Set and Exhibit Designers	$54,890	0.0%
27-1029	Designers, All Other	$51,640	0.0%
19-2032	Materials Scientists	$86,600	0.0%
21-2099	Religious Workers, All Other	$31,600	0.0%
19-4051	Nuclear Technicians	$67,520	0.0%
27-1019	Artists and Related Workers, All Other	$61,520	0.0%
25-1031	Architecture Teachers, Postsecondary	$79,600	0.0%
19-2043	Hydrologists	$79,070	0.0%
23-1022	Arbitrators, Mediators, and Conciliators	$75,550	0.0%
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	$90,070	0.0%

(continued)

Appendix Table 1B: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
25-1061	Anthropology and Archeology Teachers, Postsecondary	$81,860	0.0%
25-1192	Home Economics Teachers, Postsecondary	$68,080	0.0%
17-2121	Marine Engineers and Naval Architects	$91,730	0.0%
25-4011	Archivists	$50,140	0.0%
19-3091	Anthropologists and Archeologists	$59,040	0.0%
19-3094	Political Scientists	$105,040	0.0%
25-1053	Environmental Science Teachers, Postsecondary	$84,140	0.0%
27-1012	Craft Artists	$32,270	0.0%
19-1041	Epidemiologists	$69,660	0.0%
25-1082	Library Science Teachers, Postsecondary	$69,870	0.0%
25-1064	Geography Teachers, Postsecondary	$72,300	0.0%
19-3093	Historians	$57,610	0.0%
15-2021	Mathematicians	$101,320	0.0%
19-3041	Sociologists	$79,460	0.0%
17-2021	Agricultural Engineers	$78,400	0.0%
25-1043	Forestry and Conservation Science Teachers, Postsecondary	$82,640	0.0%
19-1011	Animal Scientists	$74,170	0.0%
19-2011	Astronomers	$101,630	0.0%
19-3092	Geographers	$74,170	0.0%
15-2099	Mathematical Science Occupations, All Other	$63,170	0.0%
19-3032	Industrial-Organizational Psychologists	$124,160	0.0%
15-2091	Mathematical Technicians	$50,910	0.0%

Appendix Table 1C: Component Occupations in the Reference Professional Occupation Index

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
Above $75,000			
17-2171	Petroleum Engineers	$138,980	0.15%
23-1011	Lawyers	$130,490	2.74%
19-3032	Industrial-Organizational Psychologists	$124,160	0.01%
29-1051	Pharmacists	$112,160	1.31%
19-2012	Physicists	$112,090	0.08%
23-1023	Judges, Magistrate Judges, and Magistrates	$110,940	0.13%
25-1112	Law Teachers, Postsecondary	$108,760	0.07%
17-2161	Nuclear Engineers	$105,160	0.09%
19-3094	Political Scientists	$105,040	0.03%
17-2011	Aerospace Engineers	$103,870	0.38%
15-1111	Computer and Information Research Scientists	$103,160	0.12%
15-2011	Actuaries	$103,000	0.09%
19-2011	Astronomers	$101,630	0.01%
17-2061	Computer Hardware Engineers	$101,360	0.35%
15-2021	Mathematicians	$101,320	0.01%
15-1133	Software Developers, Systems Software	$100,420	1.86%
19-3011	Economists	$100,270	0.07%
17-2041	Chemical Engineers	$99,440	0.13%
25-1071	Health Specialties Teachers, Postsecondary	$99,210	0.74%
19-2042	Geoscientists, Except Hydrologists and Geographers	$97,700	0.16%
25-1032	Engineering Teachers, Postsecondary	$97,260	0.16%
19-2099	Physical Scientists, All Other	$96,290	0.12%
27-1011	Art Directors	$95,500	0.15%
17-2072	Electronics Engineers, Except Computer	$94,670	0.66%
25-1063	Economics Teachers, Postsecondary	$94,450	0.06%
17-2199	Engineers, All Other	$92,260	0.60%
15-1132	Software Developers, Applications	$92,080	2.59%
17-2121	Marine Engineers and Naval Architects	$91,730	0.03%
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	$91,350	0.05%
19-2021	Atmospheric and Space Scientists	$90,860	0.05%
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	$90,070	0.03%
17-2071	Electrical Engineers	$89,200	0.74%

(continued)

Appendix Table 1C: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
17-2031	Biomedical Engineers	$88,360	0.08%
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	$88,340	0.07%
19-1042	Medical Scientists, Except Epidemiologists	$87,640	0.46%
19-1021	Biochemists and Biophysicists	$87,640	0.12%
17-2131	Materials Engineers	$86,790	0.11%
25-1054	Physics Teachers, Postsecondary	$86,730	0.07%
25-1011	Business Teachers, Postsecondary	$86,620	0.39%
19-2032	Materials Scientists	$86,600	0.04%
25-1042	Biological Science Teachers, Postsecondary	$86,060	0.24%
19-3039	Psychologists, All Other	$85,830	0.05%
25-1053	Environmental Science Teachers, Postsecondary	$84,140	0.02%
17-2141	Mechanical Engineers	$83,550	1.15%
25-1041	Agricultural Sciences Teachers, Postsecondary	$83,480	0.05%
17-2081	Environmental Engineers	$83,340	0.24%
25-1069	Social Sciences Teachers, Postsecondary, All Other	$82,750	0.04%
17-2051	Civil Engineers	$82,710	1.22%
25-1043	Forestry and Conservation Science Teachers, Postsecondary	$82,640	0.01%
15-1121	Computer Systems Analysts	$82,320	2.34%
25-1061	Anthropology and Archeology Teachers, Postsecondary	$81,860	0.03%
15-1179	Information Security Analysts, Web Developers, and Computer Network Architects	$81,670	1.31%
25-1065	Political Science Teachers, Postsecondary	$80,980	0.08%
15-1799	Computer Occupations, All Other*	$80,500	0.85%
25-1021	Computer Science Teachers, Postsecondary	$80,460	0.16%
25-1052	Chemistry Teachers, Postsecondary	$80,450	0.10%
17-2112	Industrial Engineers	$79,840	1.02%
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	$79,840	0.04%
25-1031	Architecture Teachers, Postsecondary	$79,600	0.03%
19-3041	Sociologists	$79,460	0.01%
17-1011	Architects, Except Landscape and Naval	$79,300	0.40%
19-2043	Hydrologists	$79,070	0.03%
15-2031	Operations Research Analysts	$78,840	0.31%

(continued)

Appendix Table 1C: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
19-3099	Social Scientists and Related Workers, All Other	$78,670	0.15%
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	$78,540	0.11%
17-2021	Agricultural Engineers	$78,400	0.01%
15-1141	Database Administrators	$77,350	0.52%
15-2041	Statisticians	$77,280	0.11%
15-1131	Computer Programmers	$76,010	1.54%
23-1022	Arbitrators, Mediators, and Conciliators	$75,550	0.03%
At or below $75,000:			
25-1066	Psychology Teachers, Postsecondary	$74,890	0.18%
19-2031	Chemists	$74,780	0.38%
25-1022	Mathematical Science Teachers, Postsecondary	$74,460	0.26%
25-1199	Postsecondary Teachers, All Other	$74,360	0.88%
15-1142	Network and Computer Systems Administrators	$74,270	1.64%
19-1011	Animal Scientists	$74,170	0.01%
19-3092	Geographers	$74,170	0.01%
27-1022	Fashion Designers	$73,930	0.08%
25-1067	Sociology Teachers, Postsecondary	$73,320	0.08%
19-3031	Clinical, Counseling, and School Psychologists	$73,090	0.48%
19-1029	Biological Scientists, All Other	$73,050	0.15%
25-1121	Art, Drama, and Music Teachers, Postsecondary	$72,660	0.43%
25-1064	Geography Teachers, Postsecondary	$72,300	0.02%
25-1125	History Teachers, Postsecondary	$72,200	0.11%
19-1022	Microbiologists	$71,720	0.08%
25-1126	Philosophy and Religion Teachers, Postsecondary	$71,620	0.11%
25-1113	Social Work Teachers, Postsecondary	$71,030	0.05%
25-1082	Library Science Teachers, Postsecondary	$69,870	0.02%
19-1041	Epidemiologists	$69,660	0.02%
29-1111	Registered Nurses*	$69,110	13.10%
19-2041	Environmental Scientists and Specialists, Including Health	$68,810	0.40%
25-1123	English Language and Literature Teachers, Postsecondary	$68,760	0.35%
25-1192	Home Economics Teachers, Postsecondary	$68,080	0.03%
27-1014	Multimedia Artists and Animators	$68,060	0.14%

(continued)

Appendix Table 1C: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
25-1072	Nursing Instructors and Teachers, Postsecondary	$67,810	0.27%
25-1122	Communications Teachers, Postsecondary	$67,560	0.14%
19-4051	Nuclear Technicians	$67,520	0.04%
19-3051	Urban and Regional Planners	$67,350	0.18%
25-1124	Foreign Language and Literature Teachers, Postsecondary	$66,720	0.14%
17-1012	Landscape Architects	$66,520	0.08%
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	$65,690	0.07%
25-1081	Education Teachers, Postsecondary	$65,050	0.30%
19-1012	Food Scientists and Technologists	$64,170	0.06%
19-1013	Soil and Plant Scientists	$63,890	0.06%
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	$63,820	0.09%
27-1021	Commercial and Industrial Designers	$63,570	0.14%
15-2099	Mathematical Science Occupations, All Other	$63,170	0.01%
19-1031	Conservation Scientists	$62,290	0.09%
19-1023	Zoologists and Wildlife Biologists	$61,880	0.09%
25-9031	Instructional Coordinators	$61,720	0.63%
27-1019	Artists and Related Workers, All Other	$61,520	0.03%
17-1021	Cartographers and Photogrammetrists	$60,110	0.05%
23-2099	Legal Support Workers, All Other	$60,070	0.21%
25-2054	Special Education Teachers, Secondary School	$59,080	0.64%
19-3091	Anthropologists and Archeologists	$59,040	0.03%
17-1022	Surveyors	$58,740	0.20%
25-2053	Special Education Teachers, Middle School	$58,420	0.48%
19-4041	Geological and Petroleum Technicians	$57,840	0.07%
19-3093	Historians	$57,610	0.02%
25-4021	Librarians	$57,020	0.70%
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	$56,760	4.83%
21-1012	Educational, Guidance, School, and Vocational Counselors	$56,540	1.18%
25-2041	Special Education Teachers, Preschool, Kindergarten, and Elementary School*	$56,460	1.06%
25-2032	Career/Technical Education Teachers, Secondary School	$56,330	0.42%
19-1032	Foresters	$56,130	0.04%

(continued)

Appendix Table 1C: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
25-2023	Career/Technical Education Teachers, Middle School	$56,100	0.08%
25-2022	Middle School Teachers, Except Special and Career/Technical Education	$55,780	3.09%
19-4092	Forensic Science Technicians	$55,660	0.06%
25-2021	Elementary School Teachers, Except Special Education	$55,270	6.80%
27-1027	Set and Exhibit Designers	$54,890	0.04%
21-1029	Social Workers, All Other	$54,220	0.30%
23-2091	Court Reporters	$53,710	0.09%
25-4012	Curators	$53,540	0.05%
25-1194	Vocational Education Teachers, Postsecondary	$53,480	0.60%
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	$53,400	0.06%
27-1025	Interior Designers	$52,810	0.20%
25-2012	Kindergarten Teachers, Except Special Education	$52,350	0.79%
21-1091	Health Educators	$52,150	0.27%
21-1092	Probation Officers and Correctional Treatment Specialists	$52,110	0.43%
15-1150	Computer Support Specialists	$51,820	3.04%
27-1029	Designers, All Other	$51,640	0.04%
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	$51,350	0.33%
15-2091	Mathematical Technicians	$50,910	0.01%
21-1022	Healthcare Social Workers	$50,500	0.64%
25-4011	Archivists	$50,140	0.03%
23-2011	Paralegals and Legal Assistants*	$49,960	1.21%
21-1013	Marriage and Family Therapists	$48,710	0.16%
27-1024	Graphic Designers	$48,690	0.92%
21-2011	Clergy	$48,490	0.20%
19-3022	Survey Researchers	$47,740	0.08%
25-9021	Farm and Home Management Advisors	$47,510	0.05%
25-9011	Audio-Visual and Multimedia Collections Specialists	$46,990	0.04%
19-4099	Life, Physical, and Social Science Technicians, All Other	$45,770	0.28%
19-4091	Environmental Science and Protection Technicians, Including Health	$45,270	0.15%
23-2093	Title Examiners, Abstractors, and Searchers	$44,850	0.24%
21-1019	Counselors, All Other	$44,850	0.13%

(continued)

Appendix Table 1C: Component Occupations in the Reference Professional Occupation Index (continued)

Standard Occupation Code (SOC)	Description	National mean annual wage	employment weight (>1% highlighted, account for 67% of total)
19-4031	Chemical Technicians	$44,560	0.29%
21-1021	Child, Family, and School Social Workers	$44,410	1.33%
21-1023	Mental Health and Substance Abuse Social Workers	$42,650	0.55%
21-1014	Mental Health Counselors	$42,590	0.55%
25-4013	Museum Technicians and Conservators	$42,450	0.05%
19-4061	Social Science Research Assistants	$42,410	0.13%
19-4021	Biological Technicians	$42,290	0.35%
17-3031	Surveying and Mapping Technicians	$42,050	0.23%
21-2021	Directors, Religious Activities and Education	$41,690	0.08%
25-3021	Self-Enrichment Education Teachers	$41,070	0.81%
25-9099	Education, Training, and Library Workers, All Other	$41,040	0.50%
21-1011	Substance Abuse and Behavioral Disorder Counselors	$41,030	0.37%
19-4093	Forest and Conservation Technicians	$37,460	0.15%
25-3999	Teachers and Instructors, All Other*	$37,260	3.98%
21-1015	Rehabilitation Counselors	$37,070	0.53%
19-4011	Agricultural and Food Science Technicians	$36,150	0.08%
25-1191	Graduate Teaching Assistants	$33,180	0.53%
27-1012	Craft Artists	$32,270	0.02%
25-4031	Library Technicians	$32,070	0.51%
21-2099	Religious Workers, All Other	$31,600	0.04%
21-1093	Social and Human Service Assistants	$30,710	1.73%
25-2011	Preschool Teachers, Except Special Education	$30,150	1.68%
27-1026	Merchandise Displayers and Window Trimmers	$28,500	0.32%
27-1023	Floral Designers	$25,350	0.23%
25-9041	Teacher Assistants	$25,270	5.84%

Appendix Table 1D: Reference Professional Index Values by BLS Area

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
11260	AK	1.0842	1.0781	-0.0061	-0.6%
21820	AK	1.1201	1.1473	0.0272	2.4%
33660	AL	0.8964	0.8806	-0.0158	-1.8%
12220	AL	0.8082	0.8253	0.0172	2.1%
23460	AL	0.7147	0.7309	0.0162	2.3%
33860	AL	0.8597	0.8676	0.0079	0.9%
19460	AL	0.8543	0.8770	0.0227	2.7%
11500	AL	0.8087	0.8255	0.0168	2.1%
46220	AL	0.7594	0.7806	0.0211	2.8%
20020	AL	0.8210	0.8289	0.0079	1.0%
26620	AL	1.2174	1.2296	0.0122	1.0%
22520	AL	0.7188	0.7195	0.0007	0.1%
13820	AL	0.9133	0.9108	-0.0025	-0.3%
30780	AR	0.8283	0.8292	0.0009	0.1%
27860	AR	0.6833	0.6848	0.0014	0.2%
22220	AR	0.7930	0.7830	-0.0100	-1.3%
38220	AR	0.7421	0.7378	-0.0043	-0.6%
26300	AR	0.8557	0.7780	-0.0777	-9.1%
22900	AR	0.7250	0.7254	0.0004	0.1%
38060	AZ	0.9687	0.9651	-0.0035	-0.4%
46060	AZ	0.8359	0.8376	0.0017	0.2%
39140	AZ	0.7715	0.7571	-0.0143	-1.9%
29420	AZ	0.8147	0.8400	0.0253	3.1%
22380	AZ	0.8218	0.8351	0.0133	1.6%
49740	AZ	0.7439	0.7528	0.0089	1.2%
39820	CA	0.8573	0.8617	0.0043	0.5%
12540	CA	1.0620	1.0882	0.0262	2.5%
49700	CA	0.8724	0.9031	0.0307	3.5%
41500	CA	1.0694	1.0491	-0.0203	-1.9%
36084	CA	1.2439	1.2574	0.0135	1.1%
40900	CA	1.1282	1.1521	0.0239	2.1%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
25260	CA	0.9316	0.9619	0.0303	3.3%
33700	CA	1.0196	1.0571	0.0375	3.7%
32900	CA	0.7939	0.8129	0.0189	2.4%
44700	CA	1.0056	1.0412	0.0355	3.5%
42044	CA	1.1748	1.2020	0.0272	2.3%
31460	CA	0.9196	0.9471	0.0275	3.0%
47300	CA	0.8856	0.8845	-0.0011	-0.1%
41884	CA	1.3918	1.4176	0.0258	1.9%
42220	CA	1.0026	1.0176	0.0150	1.5%
20940	CA	0.9211	0.9414	0.0202	2.2%
42020	CA	1.0132	1.0471	0.0339	3.3%
31084	CA	1.1691	1.1785	0.0093	0.8%
41740	CA	1.1577	1.1611	0.0034	0.3%
34900	CA	1.1513	1.1747	0.0235	2.0%
41940	CA	1.5346	1.5826	0.0480	3.1%
37100	CA	1.1148	1.1341	0.0193	1.7%
40140	CA	1.0341	1.0552	0.0211	2.0%
42100	CA	0.9791	0.9845	0.0055	0.6%
42060	CA	1.1074	1.1231	0.0156	1.4%
23420	CA	0.9656	0.9720	0.0064	0.7%
17020	CA	0.9833	1.0067	0.0235	2.4%
46700	CA	1.2087	1.2324	0.0237	2.0%
24300	CO	0.9407	0.9537	0.0130	1.4%
17820	CO	1.0117	1.0232	0.0115	1.1%
24540	CO	0.8247	0.8249	0.0002	0.0%
39380	CO	0.7892	0.8095	0.0204	2.6%
19740	CO	1.1119	1.1097	-0.0022	-0.2%
22660	CO	1.0563	1.0609	0.0045	0.4%
14500	CO	1.0652	1.0770	0.0117	1.1%
76450	CT	0.9439	0.9635	0.0196	2.1%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
71950	CT	1.0882	1.0846	-0.0037	-0.3%
73450	CT	1.0741	1.0783	0.0042	0.4%
72850	CT	1.0447	1.0691	0.0245	2.3%
75700	CT	1.0101	1.0201	0.0100	1.0%
78700	CT	0.9719	0.9875	0.0156	1.6%
47894	DC	1.3705	1.3739	0.0034	0.3%
20100	DE	0.8428	0.8386	-0.0042	-0.5%
48864	DE	1.1008	1.1090	0.0082	0.7%
29460	FL	0.7819	0.7797	-0.0022	-0.3%
22744	FL	0.9968	0.9763	-0.0205	-2.1%
37460	FL	1.0228	1.0037	-0.0191	-1.9%
27260	FL	0.9376	0.9122	-0.0253	-2.7%
15980	FL	0.9885	0.9613	-0.0272	-2.8%
34940	FL	1.0302	0.9920	-0.0382	-3.7%
33124	FL	1.0019	0.9946	-0.0073	-0.7%
19660	FL	0.8541	0.8053	-0.0488	-5.7%
36740	FL	0.9416	0.9126	-0.0290	-3.1%
39460	FL	0.8737	0.8693	-0.0044	-0.5%
18880	FL	1.0049	1.0376	0.0327	3.3%
36100	FL	0.9111	0.9295	0.0184	2.0%
35840	FL	0.8418	0.8101	-0.0318	-3.8%
23540	FL	0.9631	0.9394	-0.0237	-2.5%
48424	FL	0.9369	0.9109	-0.0260	-2.8%
42680	FL	0.7232	0.7107	-0.0125	-1.7%
37860	FL	0.7967	0.7798	-0.0170	-2.1%
45220	FL	0.8543	0.8251	-0.0292	-3.4%
37340	FL	1.1049	1.1295	0.0245	2.2%
37380	FL	0.7926	0.8084	0.0158	2.0%
38940	FL	0.8191	0.7968	-0.0223	-2.7%
45300	FL	0.9610	0.9385	-0.0225	-2.3%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
19140	GA	0.8440	0.8655	0.0215	2.6%
42340	GA	0.8241	0.8313	0.0072	0.9%
17980	GA	0.8358	0.8484	0.0126	1.5%
47580	GA	0.9230	0.9336	0.0106	1.2%
23580	GA	0.7661	0.7683	0.0022	0.3%
25980	GA	0.6018	0.5788	-0.0230	-3.8%
31420	GA	0.7808	0.7894	0.0086	1.1%
12020	GA	0.7923	0.7765	-0.0158	-2.0%
10500	GA	0.7690	0.7662	-0.0028	-0.4%
12060	GA	0.9827	0.9828	0.0001	0.0%
15260	GA	0.7606	0.7792	0.0186	2.4%
46660	GA	0.7543	0.7626	0.0083	1.1%
12260	GA	0.8946	0.9076	0.0130	1.5%
40660	GA	0.8652	0.8987	0.0335	3.9%
26180	HI	0.9523	0.9678	0.0155	1.6%
47940	IA	0.7188	0.7119	-0.0069	-1.0%
43580	IA	0.6836	0.6656	-0.0181	-2.6%
26980	IA	0.8011	0.8160	0.0148	1.8%
19780	IA	0.9052	0.8947	-0.0106	-1.2%
20220	IA	0.7591	0.7654	0.0063	0.8%
19340	IA	0.8245	0.8217	-0.0027	-0.3%
11180	IA	0.5701	0.5745	0.0044	0.8%
16300	IA	0.7831	0.7886	0.0055	0.7%
17660	ID	0.6951	0.7080	0.0129	1.9%
38540	ID	0.6687	0.6677	-0.0010	-0.2%
30300	ID	0.7837	0.7946	0.0109	1.4%
26820	ID	0.7317	0.7449	0.0132	1.8%
14260	ID	0.8462	0.8408	-0.0054	-0.6%
16974	IL	1.0604	1.0359	-0.0246	-2.3%
19500	IL	0.7904	0.7870	-0.0034	-0.4%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
28100	IL	0.7826	0.7964	0.0138	1.8%
16580	IL	1.1162	1.0673	-0.0488	-4.4%
29404	IL	0.9938	0.9760	-0.0179	-1.8%
19180	IL	0.7532	0.7546	0.0014	0.2%
37900	IL	0.8495	0.8408	-0.0088	-1.0%
40420	IL	0.8804	0.8986	0.0182	2.1%
44100	IL	0.8601	0.8628	0.0027	0.3%
14060	IL	0.8236	0.8090	-0.0145	-1.8%
23844	IN	0.7540	0.7645	0.0105	1.4%
29020	IN	0.7728	0.8005	0.0278	3.6%
11300	IN	0.8216	0.8422	0.0206	2.5%
21140	IN	0.7267	0.7268	0.0001	0.0%
45460	IN	0.6665	0.6716	0.0052	0.8%
43780	IN	0.8134	0.8011	-0.0123	-1.5%
29140	IN	0.6622	0.6807	0.0185	2.8%
33140	IN	0.7489	0.7614	0.0125	1.7%
23060	IN	0.8302	0.8441	0.0139	1.7%
14020	IN	0.7218	0.7244	0.0026	0.4%
34620	IN	0.7633	0.7720	0.0087	1.1%
26900	IN	0.9073	0.9120	0.0047	0.5%
21780	IN	0.8104	0.8074	-0.0030	-0.4%
18020	IN	0.8383	0.8434	0.0050	0.6%
31740	KS	0.7556	0.7589	0.0033	0.4%
45820	KS	0.8061	0.8125	0.0064	0.8%
29940	KS	0.7122	0.7071	-0.0052	-0.7%
48620	KS	0.8603	0.8649	0.0047	0.5%
36980	KY	0.6874	0.6540	-0.0334	-4.9%
21060	KY	0.8312	0.8277	-0.0036	-0.4%
31140	KY	0.8776	0.8875	0.0099	1.1%
30460	KY	0.8813	0.8701	-0.0112	-1.3%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
14540	KY	0.7929	0.7841	-0.0088	-1.1%
12940	LA	0.9053	0.8947	-0.0106	-1.2%
29180	LA	0.9145	0.8852	-0.0293	-3.2%
10780	LA	0.8084	0.8187	0.0103	1.3%
35380	LA	0.9596	0.9601	0.0005	0.1%
33740	LA	0.7344	0.7493	0.0149	2.0%
29340	LA	0.8642	0.8513	-0.0130	-1.5%
26380	LA	0.8172	0.8176	0.0004	0.0%
43340	LA	0.8498	0.8467	-0.0031	-0.4%
70900	MA	0.9936	1.0048	0.0112	1.1%
73604	MA	0.8700	0.8828	0.0127	1.5%
76600	MA	0.7470	0.7551	0.0080	1.1%
74500	MA	0.8483	0.8552	0.0069	0.8%
73104	MA	1.2179	1.2188	0.0009	0.1%
79600	MA	1.0458	1.0468	0.0010	0.1%
76524	MA	0.9115	0.9327	0.0212	2.3%
78254	MA	0.9362	0.9450	0.0088	0.9%
78100	MA	0.9430	0.9564	0.0134	1.4%
72104	MA	0.9364	0.9498	0.0135	1.4%
75550	MA	0.8992	0.9374	0.0381	4.2%
71654	MA	1.2554	1.2428	-0.0125	-1.0%
74804	MA	1.2089	1.2324	0.0235	1.9%
74204	MA	1.0010	1.0335	0.0325	3.2%
13644	MD	1.2593	1.2786	0.0193	1.5%
25180	MD	0.9058	0.9052	-0.0006	-0.1%
12580	MD	1.1020	1.0758	-0.0262	-2.4%
41540	MD	0.9114	0.9391	0.0277	3.0%
19060	MD	0.8323	0.8461	0.0137	1.6%
74650	ME	0.7447	0.7599	0.0152	2.0%
70750	ME	0.7928	0.8012	0.0084	1.1%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
76750	ME	0.8821	0.8839	0.0019	0.2%
27100	MI	0.6264	0.6291	0.0027	0.4%
13020	MI	0.9159	0.9413	0.0254	2.8%
28020	MI	0.8789	0.8837	0.0048	0.5%
24340	MI	0.8904	0.8954	0.0051	0.6%
26100	MI	0.8944	0.9283	0.0339	3.8%
22420	MI	0.8605	0.8545	-0.0060	-0.7%
11460	MI	1.0183	1.0188	0.0006	0.1%
47644	MI	1.0648	1.0630	-0.0019	-0.2%
40980	MI	0.8803	0.9087	0.0283	3.2%
35660	MI	0.6736	0.6831	0.0095	1.4%
34740	MI	0.8352	0.8717	0.0364	4.4%
33780	MI	0.8641	0.9078	0.0437	5.1%
29620	MI	0.7941	0.7965	0.0024	0.3%
19804	MI	0.9920	0.9831	-0.0088	-0.9%
12980	MI	0.9435	0.9764	0.0329	3.5%
31860	MN	0.6259	0.6302	0.0044	0.7%
33460	MN	1.0488	1.0535	0.0047	0.4%
20260	MN	0.8584	0.8659	0.0076	0.9%
41060	MN	0.8846	0.9154	0.0308	3.5%
40340	MN	1.1612	1.1781	0.0169	1.5%
27900	MO	0.6918	0.6822	-0.0097	-1.4%
28140	MO	0.9593	0.9442	-0.0151	-1.6%
16020	MO	0.7614	0.7540	-0.0075	-1.0%
17860	MO	0.8290	0.8073	-0.0217	-2.6%
44180	MO	0.7501	0.7425	-0.0076	-1.0%
41140	MO	0.4772	0.4777	0.0005	0.1%
41180	MO	0.9545	0.9499	-0.0046	-0.5%
27620	MO	0.7295	0.7208	-0.0086	-1.2%
27140	MS	0.8243	0.8156	-0.0087	-1.1%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
37700	MS	0.7070	0.7043	-0.0027	-0.4%
25620	MS	0.6915	0.6992	0.0077	1.1%
25060	MS	0.7910	0.7879	-0.0032	-0.4%
13740	MT	0.8136	0.8081	-0.0056	-0.7%
24500	MT	0.6561	0.6296	-0.0265	-4.0%
33540	MT	0.7757	0.7593	-0.0164	-2.1%
48900	NC	0.8182	0.8256	0.0074	0.9%
20500	NC	1.1018	1.0815	-0.0203	-1.8%
22180	NC	0.7595	0.7355	-0.0240	-3.2%
39580	NC	0.9611	0.9602	-0.0009	-0.1%
16740	NC	0.9650	0.9541	-0.0109	-1.1%
11700	NC	0.8120	0.8228	0.0108	1.3%
27340	NC	0.8263	0.8270	0.0006	0.1%
24780	NC	0.8109	0.8182	0.0073	0.9%
24140	NC	0.6480	0.6591	0.0110	1.7%
15500	NC	0.7689	0.7800	0.0111	1.4%
49180	NC	0.8441	0.8439	-0.0002	0.0%
40580	NC	0.7594	0.7754	0.0159	2.1%
25860	NC	0.7451	0.7449	-0.0002	0.0%
24660	NC	0.9091	0.9153	0.0062	0.7%
24220	ND	0.7253	0.7279	0.0026	0.4%
13900	ND	0.7958	0.7945	-0.0013	-0.2%
22020	ND	0.8641	0.8542	-0.0098	-1.1%
36540	NE	0.8630	0.8690	0.0060	0.7%
30700	NE	0.8221	0.8178	-0.0044	-0.5%
74950	NH	1.0142	1.0308	0.0166	1.6%
76900	NH	1.0302	1.0547	0.0245	2.4%
75404	NH	1.0158	1.0252	0.0094	0.9%
77350	NH	0.7801	0.7933	0.0132	1.7%
20764	NJ	1.0917	1.0887	-0.0030	-0.3%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
36140	NJ	0.8261	0.8166	-0.0095	-1.2%
35084	NJ	1.1155	1.1066	-0.0090	-0.8%
15804	NJ	1.0010	0.9936	-0.0074	-0.7%
45940	NJ	1.1273	1.1389	0.0116	1.0%
47220	NJ	0.8862	0.8766	-0.0097	-1.1%
12100	NJ	1.0159	1.0073	-0.0087	-0.9%
22140	NM	0.7395	0.7498	0.0103	1.4%
42140	NM	0.9463	0.9089	-0.0375	-4.0%
29740	NM	0.9271	0.9395	0.0124	1.3%
10740	NM	0.9671	0.9700	0.0030	0.3%
29820	NV	0.9835	0.9989	0.0154	1.6%
16180	NV	1.1740	1.1666	-0.0074	-0.6%
39900	NV	1.1096	1.0932	-0.0164	-1.5%
24020	NY	0.7667	0.7768	0.0101	1.3%
35644	NY	1.2272	1.2098	-0.0174	-1.4%
21300	NY	0.9013	0.8805	-0.0208	-2.3%
35004	NY	1.1281	1.1300	0.0019	0.2%
15380	NY	0.9027	0.8975	-0.0053	-0.6%
27060	NY	0.8249	0.8287	0.0038	0.5%
46540	NY	0.8420	0.8444	0.0024	0.3%
39100	NY	0.9697	0.9637	-0.0060	-0.6%
10580	NY	0.9640	0.9599	-0.0041	-0.4%
28740	NY	0.8705	0.8705	0.0000	0.0%
13780	NY	0.8192	0.8141	-0.0051	-0.6%
40380	NY	0.9453	0.9345	-0.0108	-1.1%
45060	NY	0.9140	0.9079	-0.0061	-0.7%
10420	OH	0.8997	0.9142	0.0146	1.6%
31900	OH	0.8086	0.8259	0.0173	2.1%
30620	OH	0.8463	0.8707	0.0243	2.9%
41780	OH	0.7524	0.7569	0.0045	0.6%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
44220	OH	0.7869	0.8245	0.0376	4.8%
15940	OH	0.8147	0.8230	0.0083	1.0%
18140	OH	0.9894	0.9993	0.0099	1.0%
17460	OH	0.9688	0.9841	0.0153	1.6%
17140	OH	0.9360	0.9394	0.0035	0.4%
44600	OH	0.7768	0.7965	0.0197	2.5%
45780	OH	0.8110	0.8166	0.0056	0.7%
49660	OH	0.8023	0.8000	-0.0023	-0.3%
19380	OH	0.9816	1.0021	0.0205	2.1%
46140	OK	0.8712	0.8594	-0.0118	-1.4%
30020	OK	0.6225	0.6024	-0.0201	-3.2%
36420	OK	0.8687	0.8585	-0.0102	-1.2%
18700	OR	0.8293	0.8437	0.0144	1.7%
13460	OR	0.8792	0.9008	0.0216	2.5%
21660	OR	0.8797	0.8940	0.0142	1.6%
41420	OR	0.8764	0.8841	0.0077	0.9%
32780	OR	0.8769	0.9045	0.0275	3.1%
38900	OR	1.0068	1.0170	0.0102	1.0%
38300	PA	0.9605	0.9521	-0.0084	-0.9%
29540	PA	0.8737	0.8732	-0.0006	-0.1%
30140	PA	0.9005	0.9023	0.0018	0.2%
11020	PA	0.8004	0.7719	-0.0285	-3.6%
39740	PA	0.9149	0.9136	-0.0013	-0.1%
10900	PA	0.9796	0.9794	-0.0002	0.0%
49620	PA	0.9125	0.9120	-0.0005	-0.1%
27780	PA	0.8070	0.8139	0.0069	0.9%
37964	PA	1.0839	1.0665	-0.0174	-1.6%
25420	PA	0.9839	0.9929	0.0091	0.9%
44300	PA	0.8167	0.7805	-0.0362	-4.4%
48700	PA	0.8203	0.8483	0.0280	3.4%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
21500	PA	0.7862	0.7931	0.0069	0.9%
42540	PA	0.8385	0.8350	-0.0035	-0.4%
41900	PR	0.4871	0.5244	0.0374	7.7%
10380	PR	0.5082	0.5316	0.0234	4.6%
32420	PR	0.4906	0.5007	0.0101	2.1%
49500	PR	0.4692	0.4917	0.0225	4.8%
25020	PR	0.5026	0.5273	0.0247	4.9%
21940	PR	0.4829	0.5078	0.0249	5.2%
41980	PR	0.5502	0.5545	0.0043	0.8%
38660	PR	0.5086	0.5266	0.0181	3.6%
77200	RI	1.0130	1.0269	0.0139	1.4%
16700	SC	0.9381	0.9323	-0.0058	-0.6%
17900	SC	0.8767	0.8670	-0.0097	-1.1%
24860	SC	0.9068	0.8952	-0.0116	-1.3%
34820	SC	0.7716	0.7732	0.0016	0.2%
11340	SC	0.7604	0.7887	0.0283	3.7%
22500	SC	0.8018	0.8215	0.0197	2.5%
44940	SC	0.7449	0.7490	0.0041	0.5%
43900	SC	0.8441	0.8531	0.0090	1.1%
43620	SD	0.8044	0.7911	-0.0133	-1.7%
39660	SD	0.7613	0.7629	0.0016	0.2%
27740	TN	0.7708	0.7776	0.0068	0.9%
27180	TN	0.7564	0.7412	-0.0152	-2.0%
16860	TN	0.8736	0.8812	0.0077	0.9%
28700	TN	0.7958	0.7885	-0.0073	-0.9%
34980	TN	0.8738	0.8537	-0.0201	-2.3%
28940	TN	0.9159	0.8995	-0.0164	-1.8%
17300	TN	0.7995	0.8129	0.0134	1.7%
32820	TN	0.8979	0.8963	-0.0015	-0.2%
34100	TN	0.6513	0.6780	0.0266	4.1%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
17420	TN	0.7529	0.7665	0.0136	1.8%
31180	TX	0.7506	0.7573	0.0068	0.9%
32580	TX	0.8195	0.8258	0.0063	0.8%
26420	TX	1.1290	1.1146	-0.0144	-1.3%
46340	TX	0.8038	0.8208	0.0170	2.1%
47380	TX	0.7431	0.7478	0.0047	0.6%
23104	TX	0.9503	0.9675	0.0172	1.8%
13140	TX	0.8801	0.8771	-0.0030	-0.3%
29700	TX	0.8357	0.8064	-0.0293	-3.5%
41700	TX	0.9398	0.9448	0.0051	0.5%
10180	TX	0.7422	0.7456	0.0034	0.5%
12420	TX	1.0451	1.0223	-0.0228	-2.2%
36220	TX	0.9932	0.9247	-0.0685	-6.9%
45500	TX	0.7941	0.7779	-0.0162	-2.0%
48660	TX	0.7441	0.7663	0.0222	3.0%
18580	TX	0.8563	0.8476	-0.0087	-1.0%
43300	TX	0.8033	0.8136	0.0104	1.3%
17780	TX	0.7750	0.7499	-0.0251	-3.2%
21340	TX	0.8496	0.8548	0.0052	0.6%
28660	TX	0.8094	0.8105	0.0011	0.1%
41660	TX	0.7975	0.8217	0.0241	3.0%
19124	TX	1.0862	1.0887	0.0025	0.2%
15180	TX	0.7773	0.7857	0.0084	1.1%
47020	TX	0.9564	0.9456	-0.0109	-1.1%
30980	TX	0.7730	0.7685	-0.0045	-0.6%
33260	TX	1.0740	1.0703	-0.0037	-0.3%
11100	TX	0.8718	0.8711	-0.0007	-0.1%
36260	UT	0.7774	0.7892	0.0118	1.5%
41100	UT	0.6828	0.6686	-0.0142	-2.1%
30860	UT	0.7055	0.7063	0.0008	0.1%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
41620	UT	0.9258	0.9136	-0.0122	-1.3%
39340	UT	0.7731	0.7766	0.0035	0.5%
31340	VA	0.8327	0.8228	-0.0099	-1.2%
19260	VA	0.7780	0.7448	-0.0332	-4.3%
25500	VA	0.8534	0.8457	-0.0077	-0.9%
40060	VA	0.9499	0.9463	-0.0037	-0.4%
13980	VA	0.8970	0.8620	-0.0350	-3.9%
47260	VA	0.9349	0.9282	-0.0067	-0.7%
16820	VA	0.9373	0.9392	0.0020	0.2%
40220	VA	0.8127	0.8115	-0.0011	-0.1%
49020	VA	0.8678	0.8804	0.0126	1.5%
72400	VT	0.9333	0.9242	-0.0091	-1.0%
34580	WA	0.8567	0.8906	0.0339	4.0%
42644	WA	1.1997	1.2149	0.0152	1.3%
31020	WA	0.8705	0.9130	0.0425	4.9%
14740	WA	0.9628	0.9914	0.0286	3.0%
28420	WA	1.0351	1.0694	0.0343	3.3%
13380	WA	0.8283	0.8527	0.0244	2.9%
48300	WA	0.8434	0.8651	0.0217	2.6%
44060	WA	0.9207	0.9338	0.0131	1.4%
45104	WA	0.9226	0.9484	0.0258	2.8%
49420	WA	0.7945	0.8198	0.0252	3.2%
36500	WA	0.9769	1.0192	0.0423	4.3%
22540	WI	0.8107	0.8332	0.0225	2.8%
39540	WI	0.8595	0.8753	0.0158	1.8%
43100	WI	0.9275	0.9283	0.0008	0.1%
20740	WI	0.8466	0.8667	0.0201	2.4%
24580	WI	0.9018	0.9046	0.0028	0.3%
27500	WI	0.7806	0.8032	0.0226	2.9%
33340	WI	0.9623	0.9676	0.0052	0.5%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Metropolitan Areas					
31540	WI	0.9740	0.9817	0.0077	0.8%
29100	WI	0.8531	0.8618	0.0087	1.0%
11540	WI	0.8522	0.8522	0.0001	0.0%
36780	WI	0.8224	0.8443	0.0219	2.7%
48140	WI	0.8647	0.8747	0.0100	1.2%
48540	WV	0.6965	0.6923	-0.0042	-0.6%
16620	WV	0.8668	0.8315	-0.0353	-4.1%
37620	WV	0.7692	0.7698	0.0006	0.1%
34060	WV	0.8950	0.9029	0.0079	0.9%
26580	WV	0.7991	0.7960	-0.0031	-0.4%
16220	WY	0.9772	0.9784	0.0012	0.1%
16940	WY	0.9489	0.9735	0.0246	2.6%
Non-metropolitan areas					
299999	AK	0.9479	0.9568	0.0089	0.9%
199999	AL	0.7245	0.7392	0.0147	2.0%
599999	AR	0.6673	0.6798	0.0124	1.9%
499999	AZ	0.7393	0.7611	0.0218	2.9%
699999	CA	0.8711	0.8912	0.0201	2.3%
899999	CO	0.7613	0.7500	-0.0113	-1.5%
999999	CT	0.8552	0.8838	0.0286	3.3%
1099999	DE	0.8797	0.8994	0.0198	2.2%
1299999	FL	0.7484	0.7201	-0.0283	-3.8%
1399999	GA	0.7189	0.7150	-0.0038	-0.5%
1599999	HI	0.8512	0.8737	0.0225	2.6%
1999999	IA	0.6901	0.7068	0.0167	2.4%
1699999	ID	0.7003	0.7013	0.0010	0.1%
1799999	IL	0.7333	0.7390	0.0058	0.8%
1899999	IN	0.7234	0.7467	0.0233	3.2%
2099999	KS	0.6874	0.6895	0.0021	0.3%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Non-metropolitan areas					
2199999	KY	0.7432	0.7860	0.0428	5.8%
2299999	LA	0.7525	0.7644	0.0120	1.6%
2599999	MA	0.8833	0.8683	-0.0150	-1.7%
2499999	MD	1.1588	1.1550	-0.0038	-0.3%
2399999	ME	0.7827	0.7752	-0.0075	-1.0%
2699999	MI	0.8221	0.8203	-0.0018	-0.2%
2799999	MN	0.7770	0.7960	0.0191	2.5%
2999999	MO	0.6572	0.6387	-0.0185	-2.8%
2899999	MS	0.6918	0.7109	0.0192	2.8%
3099999	MT	0.7226	0.7219	-0.0007	-0.1%
3799999	NC	0.7283	0.7298	0.0016	0.2%
3899999	ND	0.7382	0.7333	-0.0049	-0.7%
3199999	NE	0.6999	0.7104	0.0105	1.5%
3399999	NH	0.8580	0.8345	-0.0235	-2.7%
3599999	NM	0.7432	0.7137	-0.0295	-4.0%
3299999	NV	0.9368	0.9641	0.0272	2.9%
3699999	NY	0.7826	0.7641	-0.0185	-2.4%
3999999	OH	0.7978	0.8129	0.0150	1.9%
4099999	OK	0.6467	0.6747	0.0280	4.3%
4199999	OR	0.7792	0.8150	0.0359	4.6%
4299999	PA	0.8089	0.7808	-0.0281	-3.5%
7299999	PR	0.4952	0.5213	0.0261	5.3%
4599999	SC	0.7584	0.7606	0.0022	0.3%
4699999	SD	0.6591	0.6653	0.0061	0.9%
4799999	TN	0.6948	0.7164	0.0217	3.1%
4899999	TX	0.7227	0.7298	0.0071	1.0%
4999999	UT	0.6482	0.6491	0.0009	0.1%
5199999	VA	0.7921	0.7529	-0.0392	-4.9%
5099999	VT	0.7343	0.7110	-0.0233	-3.2%
5399999	WA	0.8360	0.8666	0.0306	3.7%

(continued)

Appendix Table 1D: Reference Professional Index Values by BLS Area (continued)

BLS area code	State	Reference index		Difference	Percent Difference
		from mean wages	from median wages		
Non-metropolitan areas					
5599999	WI	0.8079	0.8116	0.0038	0.5%
5499999	WV	0.7013	0.7007	-0.0006	-0.1%
5699999	WY	0.7931	0.8182	0.0251	3.2%

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
Public series suppress data for all rural BLS areas:					
15-2021 Mathematicians	115,611			970	
15-2091 Mathematical Technicians	57,210			100	
15-2099 Mathematical Science Occu	70,017			440	
17-1012 Landscape Architects	69,349			9,680	
17-2031 Biomedical Engineers	91,891			10,600	
17-2121 Marine Engineers and Nava	84,916			2,080	
17-3021 Aerospace Engineering and	62,571			5,280	
19-2011 Astronomers	108,109			970	
19-2021 Atmospheric and Space Sci	92,559			4,260	
19-2032 Materials Scientists	90,115			4,350	
19-3022 Survey Researchers	47,463			11,470	
19-3032 Industrial-Organizational	115,570			100	
19-3041 Sociologists	83,643			1,540	
19-3092 Geographers	82,797			410	
19-3094 Political Scientists	114,253			3,810	
19-4051 Nuclear Technicians	73,131			470	
19-4092 Forensic Science Technici	57,837			5,200	
23-1022 Arbitrators, Mediators, a	79,325			3,380	
25-1031 Architecture Teachers, Po	87,544			1,840	
25-1043 Forestry and Conservation	100,610			90	
25-1053 Environmental Science Tea	91,052			1,530	
25-1061 Anthropology and Archeolo	90,105			2,350	
25-1062 Area, Ethnic, and Cultura	84,385			4,090	
25-1064 Geography Teachers, Posts	79,591			920	
25-1082 Library Science Teachers,	76,203			1,110	
25-4011 Archivists	54,059			2,390	
27-1013 Fine Artists, Including P	55,913			8,470	
27-1014 Multimedia Artists and An	69,219			21,910	
27-1019 Artists and Related Worke	69,801			3,860	
27-1022 Fashion Designers	71,310			5,940	
27-1027 Set and Exhibit Designers	54,094			4,270	

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
27-2021 Athletes and Sports Compe	66,465			4,170	
27-3012 Public Address System and	39,422			3,330	
27-3021 Broadcast News Analysts	89,210			1,820	
27-4013 Radio Operators	37,236			400	
27-4014 Sound Engineering Technic	58,813			11,790	
27-4032 Film and Video Editors	72,509			16,030	
27-4099 Media and Communication E	71,924			10,930	
29-1022 Oral and Maxillofacial Su	220,256			830	
29-1023 Orthodontists	230,034			500	
29-1029 Dentists, All Other Speci	146,145			670	
29-2091 Orthotists and Prosthetis	72,816			2,290	
Rural mean is greater than urban mean:					
29-1128 Therapists, All Other*	52,024	61,075	1.174	8,810	250
19-1021 Biochemists and Biophysic	88,471	103,800	1.173	15,560	30
29-1069 Physicians and Surgeons,	182,645	211,687	1.159	272,220	17,750
29-1065 Pediatricians, General	164,602	185,809	1.129	18,930	160
29-1066 Psychiatrists	170,664	189,544	1.111	15,530	420
29-1063 Internists, General	184,432	196,698	1.067	32,180	1,860
29-1199 Health Diagnosing and Tre	83,494	87,856	1.052	24,070	560
29-1021 Dentists, General	161,307	169,545	1.051	75,780	5,940
23-2099 Legal Support Workers, Al	51,969	54,612	1.051	20,110	790
29-1062 Family and General Practi	175,281	182,192	1.039	78,820	14,940
29-1041 Optometrists	106,181	109,632	1.033	17,760	1,970
25-9011 Audio-Visual and Multimed	48,802	49,861	1.022	5,840	110
15-2031 Operations Research Analy	79,646	81,369	1.022	57,850	870
19-3039 Psychologists, All Other	85,008	86,805	1.021	6,430	60
29-1067 Surgeons	213,263	216,895	1.017	30,690	1,270
19-4041 Geological and Petroleum	60,394	61,019	1.010	8,100	930
29-1051 Pharmacists	111,684	112,795	1.010	232,190	36,840
21-1019 Counselors, All Other	46,129	46,501	1.008	18,790	1,590
17-3023 Electrical and Electronic	57,124	57,433	1.005	131,850	9,560

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
Rural mean less than Urban mean:					
15-0000 Computer and Mathematical	79,459	59,358	0.747	3,230,090	140,790
15-1111 Computer and Information	105,930	105,362	0.995	18,100	820
15-1121 Computer Systems Analysts	82,877	68,012	0.821	459,580	12,480
15-1131 Computer Programmers	76,621	62,449	0.815	300,470	11,720
15-1132 Software Developers, Appl	92,565	76,164	0.823	514,880	10,290
15-1133 Software Developers, Syst	101,156	88,471	0.875	349,540	3,490
15-1141 Database Administrators	78,313	61,884	0.790	98,760	3,300
15-1142 Network and Computer Syst	75,297	58,446	0.776	313,720	23,180
15-1150 Computer Support Speciali	52,474	41,399	0.789	581,220	40,960
15-1179 Information Security Anal	82,396	64,203	0.779	255,630	9,100
15-1799 Computer Occupations, All	81,608	69,103	0.847	162,200	5,200
15-2011 Actuaries	104,501	89,310	0.855	15,910	40
15-2041 Statisticians	79,896	61,530	0.770	19,260	40
17-0000 Architecture and Engineer	78,070	65,507	0.839	2,083,190	209,770
17-1011 Architects, Except Landsc	79,741	70,899	0.889	76,880	1,360
17-1021 Cartographers and Photogr	61,828	46,171	0.747	7,210	190
17-1022 Surveyors	60,459	50,973	0.843	32,570	5,050
17-2011 Aerospace Engineers	106,102	103,691	0.977	54,450	1,190
17-2021 Agricultural Engineers	91,165	60,124	0.660	390	80
17-2041 Chemical Engineers	100,966	89,976	0.891	20,090	910
17-2051 Civil Engineers	83,419	72,025	0.863	226,650	20,200
17-2061 Computer Hardware Enginee	103,201	89,806	0.870	49,080	260
17-2071 Electrical Engineers	90,016	80,791	0.898	135,330	7,310
17-2072 Electronics Engineers, Ex	95,651	94,107	0.984	121,550	3,700
17-2081 Environmental Engineers	84,214	75,232	0.893	42,660	2,440
17-2111 Health and Safety Enginee	80,552	71,358	0.886	16,400	1,020
17-2112 Industrial Engineers	81,172	69,136	0.852	179,640	24,860
17-2131 Materials Engineers	88,924	76,246	0.857	14,180	320
17-2141 Mechanical Engineers	84,306	71,323	0.846	192,720	20,770
17-2151 Mining and Geological Eng	103,308	82,873	0.802	1,950	1,420
17-2161 Nuclear Engineers	108,391	90,030	0.831	3,900	170
17-2171 Petroleum Engineers	142,897	119,892	0.839	23,130	1,770

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
17-2199 Engineers, All Other	93,914	80,477	0.857	103,420	6,710
17-3011 Architectural and Civil D	50,765	43,157	0.850	76,790	5,620
17-3012 Electrical and Electronic	58,331	54,544	0.935	20,430	510
17-3013 Mechanical Drafters	53,589	44,233	0.825	49,140	6,330
17-3019 Drafters, All Other	49,450	42,198	0.853	11,040	560
17-3022 Civil Engineering Technic	49,954	40,951	0.820	57,270	8,890
17-3024 Electro-Mechanical Techni	53,814	33,690	0.626	9,220	40
17-3025 Environmental Engineering	49,360	45,598	0.924	13,380	740
17-3026 Industrial Engineering Te	51,985	47,011	0.904	45,690	6,780
17-3027 Mechanical Engineering Te	53,834	47,748	0.887	33,450	3,140
17-3029 Engineering Technicians,	60,144	53,235	0.885	49,610	3,410
17-3031 Surveying and Mapping Tec	42,972	37,054	0.862	35,920	7,530
19-0000 Life, Physical, and Socia	69,054	53,708	0.778	949,960	121,620
19-1011 Animal Scientists	76,430	46,660	0.610	350	50
19-1012 Food Scientists and Techn	67,869	56,629	0.834	6,410	740
19-1013 Soil and Plant Scientists	65,082	56,091	0.862	4,420	1,210
19-1022 Microbiologists	75,405	54,120	0.718	12,520	60
19-1023 Zoologists and Wildlife B	65,110	58,598	0.900	8,500	3,260
19-1029 Biological Scientists, Al	76,288	64,407	0.844	19,540	3,080
19-1031 Conservation Scientists	66,114	57,385	0.868	7,980	4,340
19-1032 Foresters	57,564	54,966	0.955	1,750	2,770
19-1041 Epidemiologists	69,049	50,850	0.736	1,500	40
19-1042 Medical Scientists, Excep	86,320	82,429	0.955	80,300	300
19-1099 Life Scientists, All Othe	75,447	59,233	0.785	4,780	80
19-2012 Physicists	113,876	103,720	0.911	10,490	210
19-2031 Chemists	75,760	63,119	0.833	69,720	3,380
19-2041 Environmental Scientists	69,813	57,232	0.820	68,380	6,280
19-2042 Geoscientists, Except Hyd	100,055	84,484	0.844	25,580	1,110
19-2043 Hydrologists	81,972	79,636	0.972	3,760	160
19-2099 Physical Scientists, All	97,885	88,990	0.909	13,280	240
19-3011 Economists	106,586	65,618	0.616	10,470	90
19-3031 Clinical, Counseling, and	74,526	61,611	0.827	85,410	9,980
19-3051 Urban and Regional Planne	70,202	54,923	0.782	29,160	2,460

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
19-3091 Anthropologists and Arche	58,254	54,337	0.933	2,640	190
19-3093 Historians	65,721	30,819	0.469	920	170
19-3099 Social Scientists and Rel	80,865	66,221	0.819	21,660	680
19-4011 Agricultural and Food Sci	34,940	31,673	0.906	7,350	2,280
19-4021 Biological Technicians	43,588	34,716	0.796	47,940	4,690
19-4031 Chemical Technicians	44,805	43,456	0.970	47,660	4,720
19-4061 Social Science Research A	43,212	40,190	0.930	17,390	110
19-4091 Environmental Science and	46,241	41,507	0.898	21,080	2,120
19-4093 Forest and Conservation T	38,528	36,297	0.942	5,410	13,960
19-4099 Life, Physical, and Socia	46,283	37,370	0.807	43,230	2,430
21-0000 Community and Social Serv	44,572	38,435	0.862	1,624,230	281,470
21-1011 Substance Abuse and Behav	41,531	38,705	0.932	61,020	9,070
21-1012 Educational, Guidance, Sc	57,593	49,888	0.866	204,010	34,410
21-1013 Marriage and Family Thera	51,672	43,841	0.848	20,280	610
21-1014 Mental Health Counselors	42,931	39,914	0.930	92,710	13,060
21-1015 Rehabilitation Counselors	37,671	33,215	0.882	87,150	15,720
21-1021 Child, Family, and School	45,042	38,913	0.864	229,050	42,530
21-1022 Healthcare Social Workers	51,497	43,363	0.842	114,250	16,430
21-1023 Mental Health and Substan	43,531	37,765	0.868	91,090	15,490
21-1029 Social Workers, All Other	53,927	45,555	0.845	41,940	6,260
21-1091 Health Educators	53,333	43,441	0.815	46,470	4,660
21-1092 Probation Officers and Co	50,324	41,546	0.826	32,120	10,640
21-1093 Social and Human Service	31,112	27,973	0.899	299,750	57,070
21-1798 Community and Social Serv	41,902	35,745	0.853	101,940	13,410
21-2011 Clergy	50,116	41,235	0.823	32,900	4,420
21-2021 Directors, Religious Acti	42,043	30,406	0.723	12,680	1,070
21-2099 Religious Workers, All Ot	32,077	31,199	0.973	2,590	160
23-0000 Legal Occupations	100,609	63,989	0.636	932,760	62,350
23-1011 Lawyers	132,502	84,917	0.641	542,070	25,580
23-1012 Judicial Law Clerks	46,938	30,082	0.641	9,080	330
23-1021 Administrative Law Judges	94,535	59,292	0.627	4,320	130
23-1023 Judges, Magistrate Judges	108,922	88,083	0.809	10,410	4,400
23-2011 Paralegals and Legal Assi	50,827	37,286	0.734	233,270	12,910

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
23-2091 Court Reporters	53,467	37,480	0.701	9,700	570
23-2093 Title Examiners, Abstract	46,551	41,434	0.890	29,760	2,490
25-0000 Education, Training, and	52,274	42,232	0.808	7,099,690	1,285,120
25-1011 Business Teachers, Postse	88,437	68,607	0.776	55,780	6,330
25-1021 Computer Science Teachers	84,333	64,117	0.760	22,220	2,040
25-1022 Mathematical Science Teac	77,604	61,178	0.788	33,070	4,470
25-1032 Engineering Teachers, Pos	101,528	90,684	0.893	11,760	790
25-1041 Agricultural Sciences Tea	91,513	70,676	0.772	930	320
25-1042 Biological Science Teache	88,162	68,178	0.773	28,780	3,240
25-1051 Atmospheric, Earth, Marin	104,219	69,008	0.662	3,310	120
25-1052 Chemistry Teachers, Posts	83,959	76,003	0.905	12,190	1,090
25-1054 Physics Teachers, Postsec	88,874	75,824	0.853	6,610	310
25-1063 Economics Teachers, Posts	96,985	83,748	0.864	6,540	180
25-1065 Political Science Teacher	82,052	70,881	0.864	9,270	510
25-1066 Psychology Teachers, Post	76,490	62,470	0.817	23,130	2,030
25-1067 Sociology Teachers, Posts	75,485	61,077	0.809	9,360	470
25-1069 Social Sciences Teachers,	101,662	43,320	0.426	2,710	30
25-1071 Health Specialties Teache	102,356	67,538	0.660	82,440	2,420
25-1072 Nursing Instructors and T	70,137	57,497	0.820	34,140	5,010
25-1081 Education Teachers, Posts	65,939	57,190	0.867	40,180	4,140
25-1111 Criminal Justice and Law	70,853	53,666	0.757	5,750	1,010
25-1112 Law Teachers, Postseconda	114,076	88,927	0.780	6,270	140
25-1113 Social Work Teachers, Pos	74,682	47,540	0.637	3,740	90
25-1121 Art, Drama, and Music Tea	77,166	60,883	0.789	61,010	5,560
25-1122 Communications Teachers,	70,099	54,477	0.777	15,750	1,180
25-1123 English Language and Lite	71,104	57,659	0.811	47,540	5,430
25-1124 Foreign Language and Lite	67,258	63,601	0.946	17,460	740
25-1125 History Teachers, Postsec	74,661	61,388	0.822	13,310	1,350
25-1126 Philosophy and Religion T	72,752	65,432	0.899	12,920	980
25-1191 Graduate Teaching Assista	36,629	27,733	0.757	26,470	2,550
25-1192 Home Economics Teachers,	78,845	55,470	0.704	460	40
25-1193 Recreation and Fitness St	66,997	52,100	0.778	7,960	980
25-1194 Vocational Education Teac	53,875	47,326	0.878	91,110	13,640

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
25-1199 Postsecondary Teachers, A	79,518	58,726	0.739	104,890	7,680
25-2011 Preschool Teachers, Excep	30,204	29,243	0.968	305,870	37,960
25-2012 Kindergarten Teachers, Ex	54,036	46,677	0.864	123,780	26,960
25-2021 Elementary School Teacher	56,685	47,364	0.836	1,137,680	239,770
25-2022 Middle School Teachers, E	57,676	48,019	0.833	497,390	99,320
25-2023 Career/Technical Educatio	58,182	48,792	0.839	8,690	1,190
25-2031 Secondary School Teachers	58,386	48,196	0.825	793,660	170,010
25-2032 Career/Technical Educatio	58,917	48,781	0.828	48,030	19,540
25-2041 Special Education Teacher	58,262	47,813	0.821	172,810	34,280
25-2053 Special Education Teacher	60,907	48,541	0.797	76,630	12,810
25-2054 Special Education Teacher	61,904	49,344	0.797	99,780	19,750
25-3011 Adult Basic and Secondary	50,905	42,001	0.825	41,030	7,240
25-3021 Self-Enrichment Education	41,586	36,595	0.880	150,830	12,300
25-3999 Teachers and Instructors,	39,546	27,747	0.702	651,900	109,930
25-4012 Curators	58,177	39,974	0.687	6,200	400
25-4013 Museum Technicians and Co	45,271	35,523	0.785	6,680	210
25-4021 Librarians	58,849	46,293	0.787	119,390	23,590
25-4031 Library Technicians	33,500	26,396	0.788	81,180	17,330
25-9021 Farm and Home Management	48,223	46,577	0.966	2,310	920
25-9031 Instructional Coordinator	62,511	55,954	0.895	110,440	13,640
25-9041 Teacher Assistants	25,851	22,439	0.868	976,680	216,520
25-9099 Education, Training, and	41,927	37,499	0.894	83,940	7,100
27-0000 Arts, Design, Entertainme	55,336	36,113	0.653	1,563,940	139,300
27-1011 Art Directors	98,779	61,308	0.621	25,090	120
27-1012 Craft Artists	37,694	29,181	0.774	1,330	70
27-1021 Commercial and Industrial	64,765	55,468	0.856	20,970	1,110
27-1023 Floral Designers	26,413	21,831	0.827	34,230	7,260
27-1024 Graphic Designers	49,700	35,043	0.705	176,230	13,220
27-1025 Interior Designers	54,298	47,050	0.867	34,340	550
27-1026 Merchandise Displayers an	29,354	23,995	0.817	48,400	1,970
27-1029 Designers, All Other	56,551	31,920	0.564	4,900	30
27-2012 Producers and Directors	95,050	51,044	0.537	73,650	1,030
27-2022 Coaches and Scouts	37,586	30,978	0.824	156,700	24,090

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
27-2023 Umpires, Referees, and Ot	28,994	23,752	0.819	6,340	520
27-2032 Choreographers	46,163	26,243	0.568	4,190	160
27-2041 Music Directors and Compo	57,306	45,909	0.801	16,190	3,940
27-3011 Radio and Television Anno	47,213	25,668	0.544	16,670	4,570
27-3022 Reporters and Corresponde	48,736	28,024	0.575	30,940	5,020
27-3031 Public Relations Speciali	61,373	47,124	0.768	195,020	15,080
27-3041 Editors	62,120	42,763	0.688	87,460	4,510
27-3042 Technical Writers	68,464	54,757	0.800	38,240	630
27-3043 Writers and Authors	71,514	39,726	0.555	35,040	650
27-3091 Interpreters and Translat	51,872	38,239	0.737	35,790	1,600
27-3099 Media and Communication W	54,566	37,570	0.689	19,460	220
27-4011 Audio and Video Equipment	47,011	38,530	0.820	42,940	700
27-4012 Broadcast Technicians	42,768	31,005	0.725	23,980	640
27-4021 Photographers	37,563	26,843	0.715	44,980	2,760
27-4031 Camera Operators, Televis	52,560	20,290	0.386	12,000	80
29-0000 Healthcare Practitioners	74,140	61,654	0.832	6,531,700	982,010
29-1011 Chiropractors	79,066	74,173	0.938	17,220	1,890
29-1031 Dietitians and Nutritioni	55,701	50,013	0.898	44,930	5,220
29-1061 Anesthesiologists	217,172	197,367	0.909	14,580	220
29-1064 Obstetricians and Gynecol	214,632	206,130	0.960	12,040	360
29-1071 Physician Assistants	89,523	87,854	0.981	69,660	8,640
29-1081 Podiatrists	132,225	112,916	0.854	5,310	70
29-1111 Registered Nurses*	70,320	59,130	0.841	2,365,040	329,240
29-1122 Occupational Therapists	75,413	69,265	0.918	88,210	10,170
29-1123 Physical Therapists	79,833	78,640	0.985	161,010	21,350
29-1124 Radiation Therapists	79,771	61,068	0.766	9,030	370
29-1125 Recreational Therapists	44,173	40,603	0.919	13,160	1,290
29-1126 Respiratory Therapists	57,267	48,520	0.847	92,250	12,010
29-1127 Speech-Language Pathologi	73,283	62,850	0.858	97,580	14,840
29-1131 Veterinarians	93,590	79,852	0.853	42,130	7,170
29-1181 Audiologists	73,229	67,811	0.926	6,160	70
29-2011 Medical and Clinical Labo	58,543	52,004	0.888	139,240	15,760
29-2012 Medical and Clinical Labo	39,103	37,287	0.954	133,820	15,740

(continued)

Appendix Table 2: Aggregate Metro and Non-Metro Mean Annual Wages for Selected Health Care and Other Professional Occupations (continued)

Standard Occupation Code (SOC) and Description	Mean Annual Wage		Ratio (nonmetro to metro)	BLS Total Employment (where mean wage is non-missing)	
	Metro	Nonmetro		Metro	Nonmetro
29-2021 Dental Hygienists	70,770	62,525	0.883	159,710	21,940
29-2031 Cardiovascular Technologi	52,463	48,984	0.934	39,470	2,810
29-2032 Diagnostic Medical Sonogr	66,379	59,634	0.898	44,770	4,240
29-2033 Nuclear Medicine Technolo	70,840	60,646	0.856	15,460	700
29-2037 Radiologic Technologists	57,566	49,734	0.864	185,720	29,190
29-2041 Emergency Medical Technic	35,552	28,735	0.808	161,790	51,940
29-2051 Dietetic Technicians	30,890	22,883	0.741	14,720	1,590
29-2052 Pharmacy Technicians	30,499	26,990	0.885	287,780	54,300
29-2053 Psychiatric Technicians	32,614	23,181	0.711	39,580	1,280
29-2054 Respiratory Therapy Techn	48,167	40,096	0.832	7,580	1,280
29-2055 Surgical Technologists	43,131	36,927	0.856	79,290	8,880
29-2056 Veterinary Technologists	32,011	29,945	0.935	63,350	6,640
29-2061 Licensed Practical and Li	43,262	36,228	0.837	589,960	141,210
29-2071 Medical Records and Healt	36,550	31,312	0.857	154,540	23,890
29-2081 Opticians, Dispensing	35,658	29,815	0.836	48,830	5,980
29-2799 Health Technologists and	42,397	37,323	0.880	86,150	6,630
29-9011 Occupational Health and S	68,344	62,086	0.908	46,640	7,300
29-9012 Occupational Health and S	48,792	44,350	0.909	6,440	350
29-9091 Athletic Trainers	46,048	39,933	0.867	11,520	720
29-9799 Healthcare Practitioners	56,023	44,648	0.797	41,910	1,510
Total	**66,214**	**49,902**	**0.754**	**45,918,880**	**5,997,800**

Appendix 3: Family Medicine Trainees by Location

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1200121026	University of Alabama Medical Center (Selma Dallas County) Program	Selma, AL	15	01000
1200421405	University of Arkansas for Medical Sciences AHEC (South Arkansas) Program	El Dorado, AR	18	05000
1203821231	Summa Health System/NEOUCOM Program	Akron, OH	22	10420
1203821437	Summa Barberton Hospital/NEOUCOM Program	Barberton, OH	18	10420
1203831232	Akron General Medical Center/NEOMED Program	Akron, OH	16	10420
1201221525	Phoebe Putney Memorial Hospital (Southwest Georgia) Program	Albany, GA	17	10500
1203512215	Ellis Hospital of Schenectady Program	Schenectady, NY	31	10580
1203521198	Albany Medical Center Program	Albany, NY	18	10580
1203421197	University of New Mexico Program	Albuquerque, NM	36	10740
1202131566	Louisiana State University (Shreveport)/Rapides Regional Medical Center Program	Alexandria, LA	17	10780
1203321436	Warren Hospital Program	Phillipsburg, NJ	18	10900
1204121259	Sacred Heart Hospital/Temple University (Allentown) Program	Allentown, PA	17	10900
1204121572	Lehigh Valley Health Network/University of South Florida College of Medicine Program	Allentown, PA	19	10900
1204121603	St Luke's Hospital Program	Bethlehem, PA	20	10900
1204111260	Altoona Regional Health System (Altoona Hospital Campus) Program	Altoona, PA	18	11020

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204821511	Texas Tech University (Amarillo) Program	Amarillo, TX	20	11100
1200221596	Providence Hospital/Alaska Family Medicine Program	Anchorage, AK	33	11260
1204511289	AnMed Health (Anderson) Program	Anderson, SC	29	11340
1205631368	University of Wisconsin (Fox Valley) Program	Appleton, WI	17	11540
1203611219	Mountain Area Health Education Center Program	Asheville, NC	27	11700
1203621575	Mountain Area Health Education Center Rural Program	Hendersonville, NC	9	11700
1201221439	Morehouse School of Medicine Program	Atlanta, GA	15	12060
1201221536	Atlanta Medical Center Program	Morrow, GA	18	12060
1201221562	Emory University Program	Atlanta, GA	23	12060
1201221009	Dwight David Eisenhower Army Medical Center Program	Fort Gordon, GA	18	12260
1201221091	Georgia Health Sciences University Program	Augusta, GA	25	12260
1201221637	Georgia Health Sciences University/Satilla Regional Medical Center Program	Augusta, GA	6	12260
1204811302	University of Texas Southwestern Medical School (Austin) Program	Austin, TX	21	12420
1200511038	Kern Medical Center Program	Bakersfield, CA	18	12540
1202312155	MedStar Franklin Square Medical Center Program	Baltimore, MD	25	12580
1202321156	University of Maryland Program	Baltimore, MD	27	12580
1202121560	Baton Rouge General Medical Center Program	Baton Rouge, LA	23	12940

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1202921590	Montana Family Medicine Residency Program	Billings, MT	20	13740
1203511203	United Health Services Hospitals Program	Johnson City, NY	27	13780
1200131020	St Vincent's East Program	Birmingham, AL	15	13820
1203721227	University of North Dakota (Bismarck) Program	Bismarck, ND	15	13900
1201511097	Family Medicine Residency of Idaho Program	Boise, ID	31	14260
1201521588	Family Medicine Residency of Idaho Rural Program	Boise, ID	7	14260
1201521698	Family Medicine Residency of Idaho (Magic Valley) Rural Program	Boise, ID	4	14260
1205421494	Naval Hospital (Bremerton) Program	Bremerton, WA	16	14740
1201421541	University of Hawaii Program	Mililani, HI	18	15000
1204821593	Valley Baptist Medical Center Program	Harlingen, TX	14	15180
1203521489	University at Buffalo Program	Buffalo, NY	45	15380
1203521516	University at Buffalo Rural Program	Buffalo, NY	4	15380
1203312667	Virtua Program	Voorhees, NJ	20	15804
1203321445	Underwood-Memorial Hospital Program	Woodbury, NJ	12	15804
1203811234	Aultman Hospital/NEOMED Program	Canton, OH	23	15940
1205712351	University of Wyoming (Casper) Program	Casper, WY	23	16220
1201822132	Cedar Rapids Medical Education Foundation Program	Cedar Rapids, IA	20	16300

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1201621492	Carle Foundation Hospital Program	Urbana, IL	16	16580
1205511337	Charleston Area Medical Center/West Virginia University (Charleston Division) Program	Charleston, WV	17	16620
1204521290	Trident Medical Center/Medical University of South Carolina Program	Charleston, SC	28	16700
1203611221	Carolinas Medical Center Program	Charlotte, NC	23	16740
1203621580	Carolinas Medical Center (Northeast-Cabarrus) Program	Concord, NC	24	16740
1203621634	Carolinas Medical Center Rural Program	Monroe, NC	7	16740
1205111317	University of Virginia Program	Charlottesville, VA	24	16820
1204731584	University of Tennessee College of Medicine at Chattanooga Program	Chattanooga, TN	17	16860
1205712369	University of Wyoming (Cheyenne) Program	Cheyenne, WY	18	16940
1201611098	MacNeal Hospital Program	Berwyn, IL	36	16974
1201611100	Loyola University/Cook County Hospital Program	Chicago, IL	36	16974
1201611102	Resurrection Medical Center Program	Chicago, IL	17	16974
1201611103	St Joseph Hospital Program	Chicago, IL	18	16974
1201611107	Advocate Lutheran General Hospital Program	Park Ridge, IL	27	16974
1201611110	Adventist LaGrange Memorial Hospital Program	La Grange, IL	21	16974
1201612363	Jackson Park Hospital Program	Chicago, IL	18	16974

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1201612693	Saints Mary and Elizabeth Medical Center Program	Chicago, IL	37	16974
1201612701	McGaw Medical Center of Northwestern University (Norwegian American) Program	Chicago, IL	16	16974
1201621109	Adventist Hinsdale Hospital Program	Hinsdale, IL	27	16974
1201621364	Advocate Christ Medical Center Program	Hometown, IL	20	16974
1201621467	University of Illinois College of Medicine at Chicago/Advocate Illinois Masonic Med Ctr Program	Chicago, IL	24	16974
1201621488	University of Illinois College of Medicine at Chicago Program	Chicago, IL	20	16974
1201621604	Rush University Medical Center/Copley Memorial Hospital Program	Aurora, IL	13	16974
1201621654	University of Chicago (NorthShore) Program	Glenview, IL	15	16974
1201631106	Swedish Covenant Hospital Program	Chicago, IL	19	16974
1201631112	West Suburban Medical Center Program	Oak Park, IL	28	16974
1201631618	Mount Sinai Hospital Medical Center of Chicago Program	Chicago, IL	19	16974
1201611099	Southern Illinois University (Carbondale) Program	Carbondale, IL	19	17000
1201621365	Southern Illinois University (Quincy) Program	Quincy, IL	18	17000
1202011143	St Elizabeth Medical Center Program	Edgewood, KY	23	17140
1203821235	Christ Hospital/University of Cincinnati College of Medicine Program	Cincinnati, OH	15	17140
1203821474	TriHealth (Bethesda North Hospital) Program	Cincinnati, OH	18	17140

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1203811236	Case Western Reserve University/University Hospitals Case Medical Center Program	Cleveland, OH	25	17460
1203811237	Case Western Reserve University (MetroHealth) Program	Cleveland, OH	19	17460
1203811238	Fairview Hospital/Cleveland Clinic Program	Cleveland, OH	18	17460
1204831605	Texas A&M Health Science Center Bryan/College Station Program	Bryan, TX	25	17780
1202811182	University of Missouri-Columbia Program	Columbia, MO	35	17860
1204511291	Palmetto Health/University of South Carolina School of Medicine Program	Columbia, SC	29	17900
1201211008	Martin Army Community Hospital Program	Fort Benning, GA	24	17980
1201211092	The Medical Center (Columbus) Program	Columbus, GA	35	17980
1203821241	Ohio State University Hospital Program	Columbus, OH	21	18140
1203821242	Riverside Methodist Hospitals (OhioHealth) Program	Columbus, OH	18	18140
1203831239	Grant Medical Center (OhioHealth) Program	Columbus, OH	36	18140
1203832240	Mount Carmel Health System Program	Columbus, OH	18	18140
1204822303	Christus Spohn Memorial Hospital Program	Corpus Christi, TX	36	18580
1204821361	University of Texas Southwestern Medical School Program	Dallas, TX	26	19124
1204821433	Methodist Health System Dallas Program	Dallas, TX	18	19124
1204821574	Baylor Medical Center at Garland Program	Garland, TX	19	19124
1201821133	Genesis Health System (Quad Cities) Program	Davenport, IA	21	19340

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1203831243	Wright State University/Dayton Community Hospitals Program	Dayton, OH	27	19380
1201621354	Southern Illinois University (Decatur) Program	Decatur, IL	14	19500
1201111083	Halifax Medical Center Program	Daytona Beach, FL	24	19660
1200712069	St Anthony Hospital Program	Westminster, CO	28	19740
1200712070	Exempla St Joseph Hospital Program	Denver, CO	24	19740
1200721071	University of Colorado Denver (HealthONE Rose Medical Center) Program	Denver, CO	17	19740
1200721544	University of Colorado Denver (HealthONE Swedish Medical Center) Program	Littleton, CO	18	19740
1200721619	University of Colorado Denver (University Hospital) Program	Denver, CO	26	19740
1201811134	Broadlawns Medical Center Program	Des Moines, IA	24	19780
1201821598	Mercy Hospital Medical Center (Des Moines) Program	Des Moines, IA	24	19780
1201831135	Central Iowa Health System (Iowa Lutheran Hospital) Program	Des Moines, IA	19	19780
1201921366	University of Kansas (Wichita)/Salina Program	Salina, KS	13	20000
1202621176	University of Minnesota (Duluth) Program	Duluth, MN	27	20260
1203621222	Duke University Hospital Program	Durham, NC	12	20500
1203631220	University of North Carolina Hospitals Program	Chapel Hill, NC	26	20500
1205631342	University of Wisconsin (Eau Claire) Program	Eau Claire, WI	16	20740
1203311190	JFK Medical Center Program	Edison, NJ	18	20764

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1203311194	Somerset Medical Center Program	Somerville, NJ	21	20764
1203312679	UMDNJ-Robert Wood Johnson at CentraState Program	Freehold, NJ	18	20764
1203321419	UMDNJ-Robert Wood Johnson Medical School Program	New Brunswick, NJ	13	20764
1202021512	University of Kentucky College of Medicine (Hazard) Program	Hazard, KY	11	21000
1202021613	University of Louisville (Glasgow) Program	Glasgow, KY	11	21000
1202031146	Trover Clinic Foundation Program	Madisonville, KY	18	21000
1204811309	Texas Tech University Health Sciences Center Paul L Foster School of Medicine Program	El Paso, TX	24	21340
1204111264	St Vincent Health Center Program	Erie, PA	20	21500
1201721119	Deaconess Hospital Program	Evansville, IN	18	21780
1202113695	Louisiana State University (Bogalusa) Program	Bogalusa, LA	14	22000
1203621011	Womack Army Medical Center Program	Fort Bragg, NC	24	22180
1203631223	Southern Regional Area Health Education Center/Duke University Hospital Program	Fayetteville, NC	20	22180
1200421033	University of Arkansas for Medical Sciences AHEC (Northwest) Program	Fayetteville, AR	29	22220
1204521375	McLeod Regional Medical Center Program	Florence, SC	22	22500
1200731072	Poudre Valley Hospital/Fort Collins Family Medicine Program	Fort Collins, CO	20	22660
1200421034	University of Arkansas for Medical Sciences AHEC (West) Program	Fort Smith, AR	24	22900

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1202222151	Maine-Dartmouth Family Medicine Program	Augusta, ME	32	23000
1201112003	US Air Force Regional Hospital/Headquarters Air Armament Center (AFMC) Program	Eglin AFB, FL	30	23020
1201721121	Fort Wayne Medical Education Program	Fort Wayne, IN	30	23060
1204831304	John Peter Smith Hospital (Tarrant County Hospital District) Program	Fort Worth, TX	63	23104
1200521041	University of California (San Francisco)/Fresno Program	Fresno, CA	32	23420
1201121084	University of Florida Program	Gainesville, FL	26	23540
1203731229	Altru Health System (Grand Forks) Program	Grand Forks, ND	21	24220
1200731073	St Mary's Hospital and Medical Center Program	Grand Junction, CO	24	24300
1200711074	North Colorado Medical Center Program	Greeley, CO	24	24540
1200731524	North Colorado Medical Center Rural Program	Greeley, CO	3	24540
1203611224	Cone Health Program	Greensboro, NC	23	24660
1203611225	Vidant Medical Center/East Carolina University Program	Greenville, NC	32	24780
1204511292	Greenville Hospital System/University of South Carolina Program	Greenville, SC	19	24860
1200513685	Loma Linda University (Hanford) Rural Program	Hanford, CA	12	25260
1201421502	Tripler Army Medical Center Program	Honolulu, HI	16	26180
1204811306	Baylor College of Medicine Program	Houston, TX	26	26420

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204821305	University of Texas Medical Branch Hospitals Program	Galveston, TX	24	26420
1204821307	Memorial Hermann Hospital System Program	Sugar Land, TX	41	26420
1204821432	San Jacinto Methodist Hospital Program	Baytown, TX	22	26420
1204821454	Conroe Medical Education Foundation Program	Conroe, TX	23	26420
1204821490	University of Texas at Houston Program	Houston, TX	35	26420
1204821565	Methodist Hospital (Houston) Program	Houston, TX	13	26420
1205521335	Marshall University School of Medicine Program	Huntington, WV	23	26580
1200111023	University of Alabama Medical Center (Huntsville) Program	Huntsville, AL	37	26620
1201711123	Community Hospitals of Indianapolis Program	Indianapolis, IN	21	26900
1201711125	St Francis Hospital and Health Centers Program	Indianapolis, IN	20	26900
1201711126	Indiana University School of Medicine Program	Indianapolis, IN	33	26900
1201711127	St Vincent Hospital and Health Care Center Program	Indianapolis, IN	22	26900
1201811136	University of Iowa Hospitals and Clinics Program	Iowa City, IA	18	26980
1201821373	Mercy Medical Center (Mason City) Program	Mason City, IA	17	26980
1202621568	University of Minnesota (Mankato) Program	Mankato, MN	14	27000
1202721181	University of Mississippi Medical Center Program	Jackson, MS	30	27140
1204721299	University of Tennessee (Jackson) Program	Jackson, TN	23	27180

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1201111085	St Vincent's Medical Center Program	Jacksonville, FL	30	27260
1201121015	Naval Hospital (Jacksonville) Program	Jacksonville, FL	35	27260
1201121545	College of Medicine, Mayo Clinic (Jacksonville) Program	Jacksonville, FL	15	27260
1203612665	Naval Hospital (Camp Lejeune) Program	Camp Lejeune, NC	19	27340
1205621503	Mercy Health System Program	Janesville, WI	19	27500
1204721410	East Tennessee State University Program	Johnson City, TN	17	27740
1204111269	Conemaugh Valley Memorial Hospital Program	Johnstown, PA	20	27780
1200421406	University of Arkansas for Medical Sciences AHEC (Northeast) Program	Jonesboro, AR	19	27860
1202721558	North Mississippi Medical Center (Tupelo) Program	Tupelo, MS	21	28000
1201911139	University of Kansas School of Medicine Program	Kansas City, KS	27	28140
1202821183	Research Medical Center Program	Kansas City, MO	39	28140
1202821422	University of Missouri at Kansas City Program	Kansas City, MO	37	28140
1204821469	Texas A&M College of Medicine-Scott and White Program	Temple, TX	24	28660
1204821657	Darnall Army Medical Center Program	Fort Hood, TX	17	28660
1204731296	East Tennessee State University (Bristol) Program	Bristol, TN	23	28700
1204731297	East Tennessee State University (Kingsport) Program	Kingsport, TN	17	28700
1203521204	Mid-Hudson Family Health Institute Program	Kingston, NY	20	28740

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204711298	University of Tennessee Medical Center at Knoxville Program	Knoxville, TN	22	28940
1205611339	Mayo Clinic Health System-Franciscan Healthcare Program	La Crosse, WI	18	29100
1202111149	University Medical Center/Louisiana State University (Lafayette) Program	Lafayette, LA	22	29180
1202121594	Louisiana State University (Lake Charles) Program	Lake Charles, LA	24	29340
1204112270	Lancaster General Hospital Program	Lancaster, PA	39	29540
1203421577	Memorial Medical Center (Las Cruces) Program	Las Cruces, NM	18	29740
1203113699	Mike O'Callaghan Federal Medical Center/Nellis Air Force Base Program	Nellis AFB, NV	21	29820
1203121481	University of Nevada School of Medicine (Las Vegas) Program	Las Vegas, NV	13	29820
1203921659	University of Oklahoma Health Sciences Center (Lawton) Program	Lawton, OK	12	30020
1204121504	Penn State University/Good Samaritan Hospital Program	Lebanon, PA	25	30140
1202021144	University of Kentucky College of Medicine Program	Lexington, KY	18	30460
1202031663	University of Kentucky College of Medicine (Morehead) Rural Program	Lexington, KY	6	30460
1203031187	Lincoln Medical Education Partnership Program	Lincoln, NE	24	30700
1200421035	University of Arkansas for Medical Sciences Program	Little Rock, AR	18	30780
1200511047	Kaiser Permanente Southern California (Los Angeles) Program	Los Angeles, CA	28	31084
1200511049	UCLA Medical Center Program	Santa Monica, CA	36	31084

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1200511053	Northridge Hospital Medical Center Program	Northridge, CA	22	31084
1200521044	Long Beach Memorial Medical Center Program	Long Beach, CA	24	31084
1200521352	Presbyterian Intercommunity Hospital Program	Whittier, CA	18	31084
1200521372	Glendale Adventist Medical Center Program	Glendale, CA	23	31084
1200521458	California Hospital Medical Center (Los Angeles)/University of Southern California Program	Los Angeles, CA	24	31084
1200521478	Los Angeles County-Harbor-UCLA Medical Center Program	Harbor City, CA	35	31084
1200521480	White Memorial Medical Center Program	Los Angeles, CA	20	31084
1200521514	Kaiser Permanente Southern California (Woodland Hills) Program	Woodland Hills, CA	18	31084
1200521610	Pomona Valley Hospital Medical Center Program	Pomona, CA	17	31084
1202021145	University of Louisville Program	Louisville, KY	24	31140
1204821310	Texas Tech University (Lubbock) Program	Lubbock, TX	26	31180
1205121318	Centra Health Program	Lynchburg, VA	18	31340
1201212093	Medical Center of Central Georgia/Mercer University School of Medicine Program	Macon, GA	24	31420
1205611343	University of Wisconsin (Madison) Program	Madison, WI	42	31540
1204200710	Dr. Ramon E Betances Hospital-Mayaguez Medical Center Program	Mayaguez, PR	0	32420
1204221620	Bella Vista Hospital Program	Mayaguez, PR	20	32420

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204811311	University of Texas Health Science Center at San Antonio (McAllen) Program	McAllen, TX	18	32580
1204721453	University of Tennessee/Saint Francis Program	Memphis, TN	28	32820
1200521459	Mercy Medical Center (Merced) Program	Merced, CA	23	32900
1203231557	Concord Hospital/New Hampshire-Dartmouth Family Medicine Program	Concord, NH	23	33000
1201121087	Jackson Memorial Hospital/Jackson Health System Program	Miami, FL	24	33124
1205621345	Medical College of Wisconsin Affiliated Hospitals (Waukesha) Program	Waukesha, WI	19	33340
1205621348	Aurora Health Care Program	Milwaukee, WI	27	33340
1205621670	Medical College of Wisconsin Affiliated Hospitals (Columbia-St Mary's) Program	Milwaukee, WI	21	33340
1205631349	Medical College of Wisconsin Affiliated Hospitals (St Joseph) Program	Milwaukee, WI	18	33340
1202611177	Hennepin County Medical Center Program	Minneapolis, MN	31	33460
1202611652	University of Minnesota/St John's Hospital Program	St. Paul, MN	18	33460
1202612653	University of Minnesota/St Joseph's Hospital Program	St. Paul, MN	24	33460
1202621526	Allina Hospitals & Clinics Program	St Paul, MN	18	33460
1202621617	University of Minnesota/Methodist Hospital Program	St. Louis Park, MN	17	33460
1202621650	University of Minnesota/University of Minnesota Medical Center (Fairview) Program	Minneapolis, MN	20	33460

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1202631651	University of Minnesota/North Memorial Hospital Program	Minneapolis, MN	30	33460
1200111024	University of South Alabama Program	Mobile, AL	18	33660
1200513703	Valley Consortium for Medical Education Family Medicine Program	Modesto, CA	32	33700
1202121440	University Medical Center/Louisiana State University (Shreveport)/Monroe Program	Monroe, LA	24	33740
1200121624	Baptist Outreach Services (Montgomery) Program	Montgomery, AL	20	33860
1205511336	West Virginia University Program	Morgantown, WV	19	34060
1201711128	Indiana University Health Ball Memorial Hospital Program	Muncie, IN	23	34620
1204721463	Meharry Medical College Program	Nashville, TN	18	34980
1203421608	University of New Mexico (Roswell) Rural Program	Roswell, NM	9	35000
1203511202	NSLIJHS/Hofstra North Shore-LIJ School of Medicine at Glen Cove Program	Glen Cove, NY	20	35004
1203511212	South Nassau Communities Hospital Program	Oceanside, NY	19	35004
1203521199	NSLIJHS/Hofstra North Shore-LIJ School of Medicine at Southside Hospital Program	Bay Shore, NY	27	35004
1203521408	SUNY at Stony Brook Program	Stony Brook, NY	17	35004
1203311191	Hunterdon Medical Center Program	Flemington, NJ	19	35084
1203311193	Mountainside Hospital Program	Verona, NJ	20	35084
1203311195	Atlantic Health (Overlook) Program	Summit, NJ	17	35084

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1202121631	East Jefferson General Hospital Program	Metairie, LA	20	35380
1202121641	Louisiana State University (Kenner) Program	Kenner, LA	18	35380
1203311192	Hoboken University Medical Center/New York Medical College Program	Hoboken, NJ	23	35644
1203500723	Institute for Family Health (Harlem) Program	New York, NY	0	35644
1203511206	Jamaica Hospital Medical Center/Albert Einstein College of Medicine Program	Jamaica, NY	30	35644
1203511207	Lutheran Medical Center Program	Brooklyn, NY	22	35644
1203511218	New York Medical College at St Joseph's Medical Center Program	Yonkers, NY	30	35644
1203521209	Albert Einstein College of Medicine Program	Bronx, NY	33	35644
1203521210	SUNY Health Science Center at Brooklyn Program	Brooklyn, NY	18	35644
1203521465	Bronx-Lebanon Hospital Center Program	Bronx, NY	34	35644
1203521507	Wyckoff Heights Medical Center Program	Brooklyn, NY	18	35644
1203521530	Brooklyn Hospital Center Program	Brooklyn, NY	21	35644
1203521581	New York Presbyterian Hospital (Columbia Campus) Program	New York, NY	18	35644
1203521706	New York Medical College (Phelps) Program	Sleepy Hollow, NY	22	35644
1203531681	Mount Sinai School of Medicine/St Joseph's Program	Clifton, NJ	10	35644
1203532538	Albert Einstein College of Medicine at Beth Israel Medical Center Program	New York, NY	25	35644

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1200531050	Contra Costa Regional Medical Center Program	Martinez, CA	40	36084
120421457	Texas Tech University (Permian Basin) Program	Odessa, TX	17	36220
1204921495	McKay-Dee Hospital Center Program	Ogden, UT	18	36260
1203921254	University of Oklahoma Health Sciences Center Program	Oklahoma City, OK	36	36420
1203921513	St Anthony Hospital Program	Oklahoma City, OK	28	36420
1203921585	Integris Baptist Medical Center/Great Plains Program	Oklahoma City, OK	15	36420
1205421497	St Peter Hospital Program	Olympia, WA	19	36500
1203021189	University of Nebraska Medical Center College of Medicine Program	Omaha, NE	45	36540
1203021498	Nebraska Medical Center/Clarkson Regional Health Service Program	Omaha, NE	17	36540
1203021517	University of Nebraska Medical Center College of Medicine Rural Program	Omaha, NE	19	36540
1203031188	Creighton University Program	Omaha, NE	23	36540
1201111088	Florida Hospital Medical Center Program	Winter Park, FL	39	36740
1200511068	Ventura County Medical Center Program	Ventura, CA	42	37100
1201112016	Naval Hospital (Pensacola) Program	Pensacola, FL	19	37860
1201611113	University of Illinois College of Medicine at Peoria Program	Peoria, IL	31	37900
1204111258	Abington Memorial Hospital Program	Jenkintown, PA	21	37964

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204121276	Thomas Jefferson University Program	Philadelphia, PA	28	37964
1204121477	Crozer-Chester Medical Center Program	Springfield, PA	23	37964
1204121633	University of Pennsylvania Program	Philadelphia, PA	21	37964
1204131261	Bryn Mawr Hospital Program	Bryn Mawr, PA	14	37964
1204131275	Chestnut Hill Hospital Program	Philadelphia, PA	17	37964
1204131576	Drexel University College of Medicine/Hahnemann University Hospital Program	Philadelphia, PA	13	37964
1203731230	University of North Dakota (Minot) Program	Minot, ND	18	38000
1200312028	Banner Good Samaritan Medical Center Program	Phoenix, AZ	24	38060
1200312030	St Joseph's Hospital and Medical Center Program	Phoenix, AZ	24	38060
1200321029	Phoenix Baptist Hospital and Medical Center Program	Phoenix, AZ	20	38060
1200332031	Scottsdale Healthcare-Osborn Program	Scottsdale, AZ	24	38060
1200411037	University of Arkansas for Medical Sciences AHEC (South Central) Program	Pine Bluff, AR	30	38220
1204111277	Latrobe Area Hospital Program	Latrobe, PA	18	38300
1204112271	UPMC Medical Education (McKeesport Hospital) Program	McKeesport, PA	20	38300
1204112279	UPMC Medical Education (St Margaret Hospital) Program	Pittsburgh, PA	42	38300
1204112280	UPMC Medical Education (Presbyterian Shadyside Hospital) Program	Pittsburgh, PA	27	38300

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204112283	Washington Hospital Program	Washington, PA	22	38300
1204121409	Medical Center (Beaver) Program	Beaver Falls, PA	17	38300
1204122278	Allegheny General Hospital-Western Pennsylvania Hospital Med Ed Consortium (Forbes Hospital) Program	Monroeville, PA	0	38300
1201521521	Idaho State University Program	Pocatello, ID	19	38540
1201521702	Idaho State University/Madison-Rexburg Family Medicine Rural Program	Pocatello, ID	0	38540
1204021371	Oregon Health & Science University Program	Portland, OR	36	38900
1204021656	Providence Health & Services - Oregon/Milwaukee Hospital Program	Milwaukie, OR	21	38900
1205421546	PeaceHealth Southwest Medical Center Program	Vancouver, WA	22	38900
1203821626	Clinton Memorial Hospital/University of Cincinnati College of Medicine Program	Wilmington, OH	12	39000
1203821640	Ohio State University Hospital Rural Program	West Liberty, OH	0	39000
1204921583	Utah Valley Regional Medical Center Program	Provo, UT	21	39340
1200721075	St Mary-Corwin Medical Center/Southern Colorado Family Medicine Program	Pueblo, CO	18	39380
1204621547	Rapid City Regional Hospital Program	Rapid City, SD	18	39660
1204112281	Reading Hospital and Medical Center Program	West Reading, PA	19	39740
1200531054	Mercy Medical Center (Redding) Program	Redding, CA	18	39820

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1203121482	University of Nevada School of Medicine Program	Reno, NV	18	39900
1203921600	University of Oklahoma College of Medicine-Tulsa Rural Program	Ramona, OK	6	40000
1205111320	Chippenham and Johnston-Willis Hospitals Program	Richmond, VA	21	40060
1205131683	Virginia Commonwealth University-Bon Secours (St Francis) Program	Midlothian, VA	19	40060
1200511057	Arrowhead Regional Medical Center Program	Colton, CA	36	40140
1200512040	Kaiser Permanente Southern California (Fontana) Program	Fontana, CA	28	40140
1200512708	Eisenhower Medical Center Program	Rancho Mirage, CA	0	40140
1200521421	Riverside County Regional Medical Center Program	Moreno Valley, CA	31	40140
1200521471	Loma Linda University Program	Loma Linda, CA	13	40140
1200521509	Kaiser Permanente Southern California (Riverside) Program	Riverside, CA	16	40140
1205111325	Carilion Clinic-Virginia Tech Carilion School of Medicine Program	Roanoke, VA	29	40220
1202621179	College of Medicine, Mayo Clinic (Rochester) Program	Rochester, MN	25	40340
1203521214	University of Rochester/Highland Hospital of Rochester Program	Rochester, NY	32	40380
1201611675	University of Illinois College of Medicine (Rockford) Rural Program	Rockford, IL	6	40420
1201631115	University of Illinois College of Medicine at Rockford Program	Rockford, IL	20	40420
1201231094	Floyd Medical Center Program	Rome, GA	19	40660

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1200511039	University of California (Davis) Health System Program	Sacramento, CA	38	40900
1200521564	Methodist Hospital of Sacramento Program	Sacramento, CA	21	40900
1200531556	Sutter Health Program	Sacramento, CA	21	40900
1204021540	Oregon Health & Science University (Cascades East) Program	Klamath Falls, OR	24	41000
1202621586	University of Minnesota/St Cloud Hospital Program	St Cloud, MN	14	41060
1201621427	St Louis University School of Medicine (Belleville) Program	Belleville, IL	41	41180
1202821186	Mercy Hospital (St Louis) Program	Creve Coeur, MO	18	41180
1202831704	St. Louis University School of Medicine Program	St. Louis, MO	5	41180
1200521056	Natividad Medical Center Program	Salinas, CA	25	41500
1204921315	University of Utah Program	Salt Lake City, UT	25	41620
1204921529	St Mark's Health Care Foundation Program	Salt Lake City, UT	12	41620
1204821312	University of Texas Health Science Center at San Antonio Program	San Antonio, TX	36	41700
1204821616	Christus Santa Rosa Health Care Program	San Antonio, TX	20	41700
1200512014	Naval Hospital (Camp Pendleton) Program	Camp Pendleton, CA	36	41740
1200512705	Kaiser Permanente Southern California (San Diego) Program	San Diego, CA	0	41740
1200521058	University of California (San Diego) Program	San Diego, CA	23	41740
1200521632	Scripps Mercy Hospital (Chula Vista) Program	Chula Vista, CA	22	41740

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1200511059	University of California (San Francisco) Program	San Francisco, CA	41	41884
1200512684	O'Connor Hospital (San Jose) Program	San Jose, CA	24	41940
1204221287	University of Puerto Rico Program	Loiza, PR	23	41980
1204221501	Hospital Dr Alejandro Otero Lopez Program	Manati, PR	18	41980
1204121518	Robert Packer Hospital/Guthrie Program	Sayre, PA	17	42000
1200521042	University of California (Irvine) Program	Orange, CA	27	42044
1200531515	Kaiser Permanente Southern California (Anaheim) Program	Santa Ana, CA	21	42044
1203421595	University of New Mexico (Santa Fe) Rural Program	Santa Fe, NM	9	42140
1200511065	Sutter Medical Center of Santa Rosa/University of California (San Francisco) Program	Santa Rosa, CA	36	42220
1201211095	Memorial Health-University Medical Center/Mercer University School of Medicine (Savannah) Program	Savannah, GA	18	42340
1204112689	Geisinger Health System Program	Wilkes Barre, PA	17	42540
1204121284	Wilkes-Barre General Hospital Program	Kingston, PA	19	42540
1205421327	Group Health Cooperative Program	Seattle, WA	16	42644
1205421328	Swedish Medical Center/Cherry Hill Program	Seattle, WA	35	42644
1205421470	Valley Medical Center Program	Renton, WA	23	42644
1205431326	Swedish Medical Center/First Hill Program	Seattle, WA	33	42644

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1205431329	University of Washington Program	Seattle, WA	24	42644
1202111567	Louisiana State University (Shreveport) Rural Program	Shreveport, LA	6	43340
1202121150	Louisiana State University (Shreveport) Program	Shreveport, LA	17	43340
1201821137	Siouxland Medical Education Foundation Program	Sioux City, IA	18	43580
1204611294	Center for Family Medicine (Sioux Falls) Program	Sioux Falls, SD	26	43620
1201711129	Memorial Hospital of South Bend Program	South Bend, IN	23	43780
1201711130	St Joseph's Regional Medical Center (South Bend) Program	Mishawaka, IN	25	43780
1204511293	Spartanburg Regional Healthcare System Program	Spartanburg, SC	35	43900
1205421330	Providence Sacred Heart Medical Center (Spokane) Program	Spokane, WA	20	44060
1205421552	Providence Sacred Heart Medical Center (Spokane) Rural Program	Spokane, WA	3	44060
1201621117	Southern Illinois University Program	Springfield, IL	24	44100
1202821476	Cox Medical Center Program	Springfield, MO	21	44180
1200531066	San Joaquin General Hospital Program	French Camp, CA	20	44700
1204521376	Self Regional Healthcare/Greenwood Program	Greenwood, SC	30	45000
1204521668	AnMed Health (Anderson) Rural Program	Seneca, SC	5	45000
1203521216	SUNY Health Science Center at Syracuse/St Joseph's Hospital Health Center Program	Syracuse, NY	43	45060
1205421013	Madigan Healthcare System Program	Tacoma, WA	17	45104

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1205431331	Multicare Medical Center Program	Tacoma, WA	22	45104
1201111086	Tallahassee Memorial Healthcare Family Medicine Program	Tallahassee, FL	32	45220
1201111090	Bayfront Medical Center Program	St. Petersburg, FL	24	45300
1201121625	University of South Florida Morsani (Morton Plant Mease Health Care) Program	Clearwater, FL	24	45300
1201711131	Union Hospital Program	Terre Haute, IN	18	45460
1200421527	University of Arkansas for Medical Sciences AHEC (Southwest) Program	Texarkana, AR	23	45500
1203811246	Flower Hospital Program	Sylvania, OH	17	45780
1203813688	St Luke's Hospital Program	Maumee, OH	12	45780
1203821250	Toledo Hospital Program	Toledo, OH	17	45780
1203831249	Mercy St Vincent Medical Center/Mercy Health Partners Program	Toledo, OH	24	45780
1203321559	UMDNJ-Robert Wood Johnson Medical School/Capital Health System-Fuld Campus Program	Trenton, NJ	12	45940
1200312032	University of Arizona Program	Tucson, AZ	25	46060
1200331692	University of Arizona College of Medicine at South Campus Program	Tucson, AZ	20	46060
1203921256	University of Oklahoma College of Medicine-Tulsa Program	Tulsa, OK	34	46140
1203921499	In His Image at St John Medical Center Program	Tulsa, OK	30	46140
1200121027	Tuscaloosa College of Community Health Science Program	Tuscaloosa, AL	36	46220

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1204821464	University of Texas Health Science Center at Tyler Program	Tyler, TX	23	46340
1203511217	St Elizabeth Medical Center * 350759 Program	Utica, NY	25	46540
1200511001	David Grant Medical Center Program	Travis AFB, CA	37	46700
1205121319	Eastern Virginia Medical School (Ghent) Program	Norfolk, VA	17	47260
1205121442	Eastern Virginia Medical School (Portsmouth) Program	Portsmouth, VA	17	47260
1205131323	VCU/Riverside Regional Medical Center Program	Newport News, VA	35	47260
1200500714	Kaweah Delta Health Care District (KDHCD) Program	Visalia, CA	0	47300
1204811313	McLennan County Medical Education and Research Foundation Program	Waco, TX	36	47380
1201021080	Providence Hospital/Georgetown University Hospital Program	Colmar Manor, MD	21	47894
1201021081	Howard University Program	Washington, DC	18	47894
1205111322	Virginia Commonwealth University Health System (Falls Church) Program	Fairfax, VA	24	47894
1205112012	National Capital Consortium (Fort Belvoir Community Hospital) Program	Fort Belvoir, VA	28	47894
1205121627	Valley Health System/Medical College of Virginia/Virginia Commonwealth University Program	Front Royal, VA	15	47894
1205521569	West Virginia University Rural Program	Harpers Ferry, WV	14	47894
1201821138	Northeast Iowa Medical Education Foundation Program	Waterloo, IA	18	47940
1205621350	University of Wisconsin (Wausau) Program	Wausau, WI	16	48140

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1205522338	Wheeling Hospital Program	Wheeling, WV	23	48540
1201911142	University of Kansas (Wichita)/Wesley Program	Wichita, KS	25	48620
1201921630	University of Kansas (Wichita)/Via Christi Hospitals Wichita Program	Wichita, KS	49	48620
1204821435	North Central Texas Medical Foundation Program	Wichita Falls, TX	24	48660
1204131285	Susquehanna Health System/Williamsport Hospital and Medical Center Program	Williamsport, PA	21	48700
1200911079	Christiana Care Health Services Program	Wilmington, DE	18	48864
1200921415	St Francis Hospital Program	Wilmington, DE	18	48864
1203621611	New Hanover Regional Medical Center Program	Wilmington, NC	14	48900
1203631226	Wake Forest University School of Medicine Program	Winston-Salem, NC	30	49180
1205421522	Community Health of Central Washington Program	Yakima, WA	20	49420
1204111286	York Hospital Program	York, PA	20	49620
1203811251	St Elizabeth Health Center/NEOUCOM Program	Youngstown, OH	13	49660
1203811359	Western Reserve Health Education/NEOMED Program	Youngstown, OH	12	49660
1200300718	Yuma Regional Medical Center Program	Yuma, AZ	0	49740
1205100716	Bon Secours Richmond Health System (Blackstone Rural) Program	Blackstone, VA	0	51000
1205522334	United Hospital Center Program	Bridgeport, WV	24	54000
1205621609	University of Wisconsin (Baraboo) Rural Program	Baraboo, WI	6	55000

(continued)

Appendix 3: Family Medicine Trainees by Location (continued)

Program	Program Name	City, State	Total Number filled positions (from "View Details" by program	BLS Area Code
1202212152	Eastern Maine Medical Center Program	Bangor, ME	27	70750
1202421644	Boston University Medical Center Program	Boston, MA	22	71654
1202431687	Tufts University at Cambridge Health Alliance Program	Malden, MA	24	71654
1200811078	Stamford Hospital/Columbia University College of Physicians and Surgeons Program	Stamford, CT	15	71950
1205021316	University of Vermont/Fletcher Allen Health Care Program	Milton, VT	18	72400
1200821076	University of Connecticut Program	Hartford, CT	21	73450
1200821077	Middlesex Hospital Program	Middletown, CT	26	73450
1202421528	Greater Lawrence Family Health Center Program	Lawrence, MA	29	74204
1202431159	University of Massachusetts (Fitchburg) Program	Fitchburg, MA	16	74500
1202211153	Central Maine Medical Center Program	Lewiston, ME	21	74650
1202231154	Maine Medical Center Program	Portland, ME	21	76750
1204321288	Memorial Hospital of Rhode Island/Brown University Program	Pawtucket, RI	39	77200
1202421160	University of Massachusetts Program	Worcester, MA	36	79600

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status

		State Aggregate		
State	Index	Metro	Nonmetro	% Diff
Alabama	Fam & Gen Practice	0.964	1.221	27%
	Gen Internal Med	1.191	1.148	-4%
	Reference Professional	0.953	0.724	-24%
	Managerial	0.967	0.816	-16%
Alaska	Fam & Gen Practice	1.031	1.184	15%
	Gen Internal Med		1.142	
	Reference Professional	1.088	0.948	-13%
	Managerial	0.914	0.81	-11%
Arizona	Fam & Gen Practice	0.968	0.984	2%
	Gen Internal Med	1.026		
	Reference Professional	0.935	0.739	-21%
	Managerial	0.904	0.732	-19%
Arkansas	Fam & Gen Practice	1.219	1.225	0%
	Gen Internal Med	1.181	1.302	10%
	Reference Professional	0.798	0.667	-16%
	Managerial	0.84	0.649	-23%
California	Fam & Gen Practice	0.99	0.926	-6%
	Gen Internal Med	1.027	0.939	-9%
	Reference Professional	1.195	0.871	-27%
	Managerial	1.142	0.775	-32%
Colorado	Fam & Gen Practice	1.058	0.945	-11%
	Gen Internal Med	0.84	1.029	23%
	Reference Professional	1.074	0.761	-29%
	Managerial	1.069	0.778	-27%
Connecticut	Fam & Gen Practice	0.913	0.939	3%
	Gen Internal Med	0.904		
	Reference Professional	1.053	0.855	-19%
	Managerial	1.099	0.879	-20%
Delaware	Fam & Gen Practice	0.851	0.814	-4%
	Gen Internal Med	1.129		
	Reference Professional	1.08	0.88	-19%
	Managerial	1.176	0.97	-18%

(continued)

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status (continued)

		State Aggregate		
State	Index	Metro	Nonmetro	% Diff
District of Columbia	Fam & Gen Practice	0.7		
	Gen Internal Med	1.221		
	Reference Professional	1.37		
	Managerial	1.208		
Florida	Fam & Gen Practice	0.966	1.087	13%
	Gen Internal Med	1.156		
	Reference Professional	0.95	0.748	-21%
	Managerial	0.987	0.776	-21%
Georgia	Fam & Gen Practice	1.045	1.175	12%
	Gen Internal Med	1.067	1.151	8%
	Reference Professional	0.944	0.719	-24%
	Managerial	1.008	0.776	-23%
Hawaii	Fam & Gen Practice	1.095	0.944	-14%
	Gen Internal Med		1.192	
	Reference Professional	0.952	0.851	-11%
	Managerial	0.865	0.785	-9%
Idaho	Fam & Gen Practice	1.009	0.968	-4%
	Gen Internal Med			
	Reference Professional	0.806	0.7	-13%
	Managerial	0.728	0.66	-9%
Illinois	Fam & Gen Practice	1.026	0.906	-12%
	Gen Internal Med	1.073	0.986	-8%
	Reference Professional	1.034	0.733	-29%
	Managerial	0.965	0.703	-27%
Indiana	Fam & Gen Practice	0.988	1.088	10%
	Gen Internal Med	1.009	0.944	-6%
	Reference Professional	0.836	0.723	-14%
	Managerial	0.877	0.777	-11%
Iowa	Fam & Gen Practice	1.223	1.177	-4%
	Gen Internal Med	0.937	1.213	29%
	Reference Professional	0.818	0.69	-16%
	Managerial	0.863	0.716	-17%

(continued)

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status (continued)

		State Aggregate		
State	Index	Metro	Nonmetro	% Diff
Kansas	Fam & Gen Practice	1.078	1.02	-5%
	Gen Internal Med	1.244	1.179	-5%
	Reference Professional	0.828	0.687	-17%
	Managerial	0.839	0.766	-9%
Kentucky	Fam & Gen Practice	0.98	0.969	-1%
	Gen Internal Med	1.173	1.035	-12%
	Reference Professional	0.867	0.743	-14%
	Managerial	0.845	0.717	-15%
Louisiana	Fam & Gen Practice	1.052	0.955	-9%
	Gen Internal Med	1.178		
	Reference Professional	0.906	0.752	-17%
	Managerial	0.858	0.743	-13%
Maine	Fam & Gen Practice	0.903	1.011	12%
	Gen Internal Med	0.896	1.038	16%
	Reference Professional	0.845	0.783	-7%
	Managerial	0.784	0.692	-12%
Maryland	Fam & Gen Practice	0.922	0.833	-10%
	Gen Internal Med	1.098		
	Reference Professional	1.138	1.159	2%
	Managerial	1.044	0.902	-14%
Massachusetts	Fam & Gen Practice	1.059		
	Gen Internal Med	1.102		
	Reference Professional	1.165	0.883	-24%
	Managerial	1.144	0.883	-23%
Michigan	Fam & Gen Practice	1.02	0.931	-9%
	Gen Internal Med	0.634	0.778	23%
	Reference Professional	0.972	0.822	-15%
	Managerial	0.971	0.756	-22%
Minnesota	Fam & Gen Practice	0.968	1.06	10%
	Gen Internal Med	1.2	1.17	-3%
	Reference Professional	1.03	0.777	-25%
	Managerial	1.02	0.764	-25%

(continued)

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status (continued)

State	Index	State Aggregate		
		Metro	Nonmetro	% Diff
Mississippi	Fam & Gen Practice	1.014	1.008	-1%
	Gen Internal Med	0.931	1.237	33%
	Reference Professional	0.793	0.692	-13%
	Managerial	0.76	0.69	-9%
Missouri	Fam & Gen Practice	1.034	1.103	7%
	Gen Internal Med	1.136	1.24	9%
	Reference Professional	0.923	0.657	-29%
	Managerial	0.9	0.639	-29%
Montana	Fam & Gen Practice	0.812	0.9	11%
	Gen Internal Med			
	Reference Professional	0.775	0.723	-7%
	Managerial	0.751	0.688	-8%
Nebraska	Fam & Gen Practice	1.068	1.169	9%
	Gen Internal Med	1.166		
	Reference Professional	0.853	0.7	-18%
	Managerial	0.951	0.71	-25%
Nevada	Fam & Gen Practice	1.164	1.131	-3%
	Gen Internal Med	1.068	1.139	7%
	Reference Professional	1.011	0.937	-7%
	Managerial	0.911	0.799	-12%
New Hampshire	Fam & Gen Practice			
	Gen Internal Med	1.091	1.016	-7%
	Reference Professional	0.984	0.858	-13%
	Managerial	1.035	0.892	-14%
New Jersey	Fam & Gen Practice	0.937		
	Gen Internal Med	0.947		
	Reference Professional	1.08		
	Managerial	1.211		
New Mexico	Fam & Gen Practice	1.037	1.097	6%
	Gen Internal Med			
	Reference Professional	0.947	0.743	-22%
	Managerial	0.837	0.778	-7%

(continued)

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status (continued)

		State Aggregate		
State	Index	Metro	Nonmetro	% Diff
New York	Fam & Gen Practice	0.951	1.065	12%
	Gen Internal Med	0.807	1.053	30%
	Reference Professional	1.129	0.783	-31%
	Managerial	1.267	0.822	-35%
North Carolina	Fam & Gen Practice	1.035	1.046	1%
	Gen Internal Med	1.14	1.22	7%
	Reference Professional	0.93	0.728	-22%
	Managerial	1.037	0.861	-17%
North Dakota	Fam & Gen Practice			
	Gen Internal Med			
	Reference Professional	0.819	0.738	-10%
	Managerial	0.825	0.797	-3%
Ohio	Fam & Gen Practice	0.876	1.027	17%
	Gen Internal Med	0.846	0.828	-2%
	Reference Professional	0.936	0.798	-15%
	Managerial	0.953	0.776	-19%
Oklahoma	Fam & Gen Practice	1.057	0.974	-8%
	Gen Internal Med			
	Reference Professional	0.862	0.647	-25%
	Managerial	0.811	0.683	-16%
Oregon	Fam & Gen Practice	0.991	0.877	-12%
	Gen Internal Med	1.086	1.027	-5%
	Reference Professional	0.971	0.779	-20%
	Managerial	0.915	0.718	-22%
Pennsylvania	Fam & Gen Practice	0.914	0.917	0%
	Gen Internal Med	0.769	1.146	49%
	Reference Professional	0.998	0.809	-19%
	Managerial	1.033	0.784	-24%
Puerto Rico	Fam & Gen Practice	0.428		
	Gen Internal Med			
	Reference Professional	0.541	0.495	-9%
	Managerial	0.653	0.541	-17%

(continued)

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status (continued)

State	Index	State Aggregate		
		Metro	Nonmetro	% Diff
Rhode Island	Fam & Gen Practice	1.129		
	Gen Internal Med			
	Reference Professional	1.013		
	Managerial	1.066		
South Carolina	Fam & Gen Practice	1.006	0.885	-12%
	Gen Internal Med	1.109	1.101	-1%
	Reference Professional	0.882	0.758	-14%
	Managerial	0.881	0.806	-9%
South Dakota	Fam & Gen Practice	0.982	1.102	12%
	Gen Internal Med	1.322	1.255	-5%
	Reference Professional	0.792	0.659	-17%
	Managerial	0.89	0.727	-18%
Tennessee	Fam & Gen Practice	1.145	1.007	-12%
	Gen Internal Med	1.143	1.165	2%
	Reference Professional	0.87	0.695	-20%
	Managerial	0.843	0.654	-22%
Texas	Fam & Gen Practice	1.023	1.096	7%
	Gen Internal Med	1.105	1.058	-4%
	Reference Professional	1.02	0.723	-29%
	Managerial	0.995	0.765	-23%
Utah	Fam & Gen Practice	1.074	0.811	-24%
	Gen Internal Med			
	Reference Professional	0.855	0.648	-24%
	Managerial	0.872	0.509	-42%
Vermont	Fam & Gen Practice	0.781	0.937	20%
	Gen Internal Med	0.714	1.003	40%
	Reference Professional	0.933	0.734	-21%
	Managerial	0.982	0.791	-19%
Virginia	Fam & Gen Practice	0.904	0.99	10%
	Gen Internal Med	0.956	1.036	8%
	Reference Professional	0.923	0.792	-14%
	Managerial	0.958	0.767	-20%

(continued)

Appendix 4: BLS OES State Aggregate Index Values by Metropolitan and Non-Metropolitan Status (continued)

		State Aggregate		
State	Index	Metro	Nonmetro	% Diff
Washington	Fam & Gen Practice	0.898	0.93	4%
	Gen Internal Med	1.048		
	Reference Professional	1.104	0.836	-24%
	Managerial	1.08	0.849	-21%
West Virginia	Fam & Gen Practice	1.034	0.982	-5%
	Gen Internal Med	0.95	1.189	25%
	Reference Professional	0.815	0.701	-14%
	Managerial	0.742	0.637	-14%
Wisconsin	Fam & Gen Practice	1.155	1.126	-3%
	Gen Internal Med	1.09	1.156	6%
	Reference Professional	0.931	0.808	-13%
	Managerial	0.918	0.742	-19%
Wyoming	Fam & Gen Practice		1.071	
	Gen Internal Med	1.072	1.098	2%
	Reference Professional	0.959	0.793	-17%
	Managerial	0.79	0.751	-5%

Appendix 5: MGMA Data on Compensation/RVU; Indexes by Specialty (relative to national mean compensation on MGMA survey)

State	Family Medicine (w/out OB)			General Internal Medicine			Cardiology (all)			Ophthalmology			General Surgery		
	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence
Illinois	0.954	0.918	-4%	0.873			0.902			1.003			0.798		
Kansas	0.843	1.008	20%	0.86			1.153						0.87		
Michigan	0.775	0.917	18%	0.885	1.017	15%									
Minnesota	1.044	1.309	25%	1.05	1.041	-1%	1.598			1.108			0.984	1.084	10%
Missouri	0.981	1.079	10%	0.984			2.329						0.867		
Ohio	0.907	0.723	-20%	0.863	0.853	-1%	0.826						0.906	0.886	-2%
Pennsylvania	0.889	0.943	6%	1.087	0.825	-24%	1.085	0.818	-25%				0.992	0.914	-8%
Washington	0.977	1.073	10%	0.917	0.988	8%	0.905			0.932			1.079		
Wisconsin	1.022	1.135	11%	1.062	1.029	-3%	1.119			1.188			1.111	1.081	-3%
Arkansas	0.936			0.738											
California	1.11			1.04			0.967			0.948			1.021		
Colorado	1.093												1.205		
Florida	1.123			0.794									0.918		
Georgia				1.041											
Indiana	0.933			0.808			0.66			1.183			0.95		
Iowa	0.807			0.992			0.786						0.908		
Kentucky	0.89			0.814											
Louisiana				1.191											
Massachusetts	2.268			1.048			0.971			0.845			0.856		
Nebraska															
New_York	1.014			1.091			0.851								
North_Carolina	0.964			0.9			0.737						0.71		
North_Dakota	0.98			1.125									1.084		
Oregon	0.996			0.978			0.842			0.86			1.261		
South_Carolina	0.891			1.362									0.789		

(continued)

Appendix 5: MGMA Data on Compensation/RVU; Indexes by Specialty (relative to national mean compensation on MGMA survey) (continued)

State	Family Medicine (w/out OB)			General Internal Medicine			Cardiology (all)			Ophthalmology			General Surgery		
	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference
Tennessee	1.14			1.015			0.959						1.035		
Texas	1.066			1.084			0.904						0.943		
Utah	0.775			0.879									1.026		
Virginia	0.767			1.079			0.792						0.77		
Alabama															
Alaska															
Arizona															
Connecticut															
Delaware															
Hawaii															
Idaho															
Maine															
Maryland															
Mississippi															
Montana															
Nevada															
New_Hampshire															
New_Jersey															
New_Mexico															
Oklahoma															
Rhode_Island															
South_Dakota															
Vermont															
West_Virginia															
Wyoming															

Appendix Table 6A: MGMA Index Values for Selected Specialties, Partners vs. Non-Partners

State	Family Medicine w/o OB			General Internal Medicine			Cardiology (all)		
	Partners included	Partners not included	% diff	Partners included	Partners not included	% diff	Partners included	Partners not included	% diff
Alabama									
Alaska									
Arizona									
Arkansas	0.936	0.859	-8.2%	0.738	0.719	-2.6%			
California	1.095	1.032	-5.7%	1.033	1.312	26.9%	0.956		
Colorado	1.095	1.085	-0.9%	1.333	1.861	39.6%			
Delaware									
Florida	1.040			0.904	0.806	-10.8%			
Georgia	0.930			0.999	0.933	-6.7%	0.824	0.758	-7.9%
Hawaii									
Idaho									
Illinois	0.952	0.938	-1.4%	0.877	0.885	0.9%	0.940	0.880	-6.4%
Indiana	0.931	0.949	1.9%	0.809	0.806	-0.4%	0.660		
Iowa	1.016	0.376	-62.9%	1.009	0.985	-2.4%	0.819		
Kansas	0.870	0.863	-0.8%	0.883	0.793	-10.1%	1.044	1.088	4.2%
Kentucky	0.965			0.807					
Louisiana				1.172					
Maine									
Maryland									
Massachusetts	1.819	2.234	22.8%	1.051	1.022	-2.7%	0.949		
Michigan	0.842	0.810	-3.8%	0.927	0.817	-11.9%			

(continued)

Appendix Table 6A: MGMA Index Values for Selected Specialties, Partners vs. Non-Partners (continued)

State	Family Medicine w/o OB			General Internal Medicine			Cardiology (all)		
	Partners included	Partners not included	% diff	Partners included	Partners not included	% diff	Partners included	Partners not included	% diff
Minnesota	1.073	1.114	3.8%	1.049	1.068	1.8%	1.598		
Mississippi	1.044	1.009	-3.3%	1.185					
Missouri	1.037	0.978	-5.6%	0.942	1.016	7.9%	1.971	2.144	8.7%
Montana									
Nebraska	1.141								
New_Hampshire	1.321			1.832					
New_Jersey									
New_Mexico									
New_York	1.010	0.957	-5.3%	1.078	0.976	-9.5%	0.924	0.874	-5.4%
North_Carolina	0.952	1.053	10.6%	0.899	0.937	4.1%	0.726	0.721	-0.7%
North_Dakota	0.980			1.125					
Ohio	0.837	0.865	3.4%	0.858	0.882	2.8%	0.820	0.779	-5.0%
Oklahoma									
Oregon	0.999	0.957	-4.2%	0.970	0.935	-3.5%	0.842		
Pennsylvania	0.917	0.802	-12.5%	1.013	1.201	18.5%	0.989	0.931	-5.8%
Rhode_Island									
South_Carolina	0.885			1.362					
South_Dakota									
Tennessee	1.091	0.831	-23.8%	0.994	0.770	-22.5%	0.959		
Texas	1.051	1.286	22.4%	1.059	1.142	7.8%	0.916	1.702	85.7%
Utah	0.801			0.905			0.855		

(continued)

Appendix Table 6A: MGMA Index Values for Selected Specialties, Partners vs. Non-Partners (continued)

State	Family Medicine w/o OB			General Internal Medicine			Cardiology (all)		
	Partners included	Partners not included	% diff	Partners included	Partners not included	% diff	Partners included	Partners not included	% diff
Vermont									
Virginia	0.981	0.820	-16.3%	1.015	1.052	3.6%	0.898	0.730	-18.8%
Washington	0.983	1.063	8.1%	0.920	0.994	8.0%	0.867		
West_Virginia									
Wisconsin	1.058	1.057	-0.1%	1.046	1.083	3.6%	1.180	1.319	11.8%
Wyoming									

Appendix Table 6B: MGMA Data on Compensation/RVU; Indexes by Specialty (relative to national mean compensation on MGMA survey)

	Primary Care			Family Medicine (w/out OB)			General Internal Medicine			Cardiology (all)			Ophthalmology			General Surgery		
	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence
Illinois	0.882	0.825	-6%	0.954	0.918	-4%	0.873			0.902			1.003			0.798		
Kansas	0.801	0.907	13%	0.843	1.008	20%	0.86			1.153						0.87		
Michigan	0.757	0.863	14%	0.775	0.917	18%	0.885	1.017	15%									
Minnesota	0.982	1.096	12%	1.044	1.309	25%	1.05	1.041	-1%	1.598			1.108			0.984	1.084	10%
Missouri	0.9	0.971	8%	0.981	1.079	10%	0.984			2.329						0.867		
Ohio	0.856	0.695	-19%	0.907	0.723	-20%	0.863	0.853	-1%	0.826						0.906	0.886	-2%
Pennsylvania	0.936	0.849	-9%	0.889	0.943	6%	1.087	0.825	-24%	1.085	0.818	-25%				0.992	0.914	-8%
Washington	1.033	0.88	-15%	0.977	1.073	10%	0.917	0.988	8%	0.905			0.932			1.079		
Wisconsin	1.033	1.004	-3%	1.022	1.135	11%	1.062	1.029	-3%	1.119			1.188			1.111	1.081	-3%
Arkansas	0.803			0.936			0.738											
California	1.067			1.11			1.04			0.967			0.948			1.021		
Colorado	1.201			1.093												1.205		
Florida	1.059			1.123			0.794									0.918		
Georgia	0.989						1.041											
Indiana	0.813			0.933			0.808			0.66			1.183			0.95		
Iowa	0.894			0.807			0.992			0.786						0.908		
Kentucky	0.782			0.89			0.814											
Louisiana	1.033						1.191											
Massachusetts	1.15			2.268			1.048			0.971			0.845			0.856		
Nebraska	1.015																	

(continued)

Appendix Table 6B: MGMA Data on Compensation/RVU; Indexes by Specialty (relative to national mean compensation on MGMA survey) (continued)

	Primary Care			Family Medicine (w/out OB)			General Internal Medicine			Cardiology (all)			Ophthalmology			General Surgery		
	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference	Metro	Non-metro	% difference
New_York	0.991			1.014			1.091			0.851								
North_Carolina	0.984			0.964			0.9			0.737						0.71		
North_Dakota	0.96			0.98			1.125									1.084		
Oregon	1.141			0.996			0.978			0.842			0.86			1.261		
South_Carolina	1.048			0.891			1.362									0.789		
Tennessee	0.989			1.14			1.015			0.959						1.035		
Texas	1.035			1.066			1.084			0.904						0.943		
Utah	0.752			0.775			0.879									1.026		
Virginia	0.859			0.767			1.079			0.792						0.77		
Alabama																		
Alaska																		
Arizona																		
Connecticut																		
Delaware																		
Hawaii																		
Idaho																		
Maine																		
Maryland																		
Mississippi																		
Montana																		

(continued)

Appendix Table 6B: MGMA Data on Compensation/RVU; Indexes by Specialty (relative to national mean compensation on MGMA survey) (continued)

	Primary Care			Family Medicine (w/out OB)			General Internal Medicine			Cardiology (all)			Ophthalmology			General Surgery		
	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence	Metro	Non-metro	% differ-ence
Nevada																		
New_Hampshire																		
New_Jersey																		
New_Mexico																		
Oklahoma																		
Rhode_Island																		
South_Dakota																		
Vermont																		
West_Virginia																		
Wyoming																		

Appendix 7A: Regression Output, Family Practice Index

	OLS on reference index	OLS on managerial index	OLS on all occup index	OLS on reference index	OLS on managerial index	OLS on all occup index	WLS* on reference index	WLS* on managerial index	WLS* on all occup index
trainee percent	0.011			0.004	0.004	0.007	-0.009	-0.004	-0.003
region main effects (reference group = NE):									
region==MW				0.475**	0.346	0.358	0.488**	0.354	0.32
region==So				0.525***	0.415**	0.579***	0.637***	0.543***	0.662***
region==We				0.199	0.194	0.249	0.23	0.25	0.278
region==PR				0.395	-0.11	0.189	0.424	-0.044	0.219
reference professional index	-0.083			0.243			0.304		
index X region interacted effects:									
(region==MW)*reference professional index				-0.452*			-0.478*		
(region==So)*reference professional index				-0.534**			-0.665***		
(region==We)*reference professional index				-0.194			-0.225		
(region==PR)*reference professional index				-1.495			-1.531		
rural				0.002	0.008	0.006	-0.004	0.004	0
managerial occupations index		-0.024			0.213			0.298*	
index X region interacted effects:									
(region==MW)*managerial occupations index					-0.292			-0.304	
(region==So)*managerial occupations index					-0.397**			-0.539**	
(region==We)*managerial occupations index					-0.18			-0.232	
(region==PR)*managerial occupations index					-0.516			-0.597	

(continued)

Appendix 7A: Regression Output, Family Practice Index (continued)

	OLS on reference index	OLS on managerial index	OLS on all occup index	OLS on reference index	OLS on managerial index	OLS on all occup index	WLS* on reference index	WLS* on managerial index	WLS* on all occup index
all occupations index			-0.046			0.267			0.318
index X region interacted effects:									
(region==MW)*all occupations index						-0.288			-0.255
(region==So)*all occupations index						-0.570***			-0.663***
(region==We)*all occupations index						-0.231			-0.257
(region==PR)*all occupations index						-0.983			-1.024
Constant	1.075***	1.025***	1.045***	0.736***	0.756***	0.696***	0.695***	0.689***	0.661***
Observations	309	309	309	309	309	309	309	309	309
R-squared	0.006	0	0.002	0.136	0.117	0.129	0.104	0.079	0.091

* significant at 10%; ** significant at 5%; *** significant at 1%

* Estimated using BLS relative standard errors on the physician index as (inverse) weights.

Appendix 7B: Regression Output, General Internal Medicine Index

	OLS	OLS	OLS	OLS	OLS	OLS	WLS*	WLS*	WLS*
	on reference index	on managerial index	on all occup index	on reference index	on managerial index	on all occup index	on reference index	on managerial index	on all occup index
region main effects (reference group = NE):									
region==MW				-0.086	0.306	-0.023	-0.379	0.261	-0.216
region==So				-0.151	-0.071	-0.071	-0.456	-0.351	-0.326
region==We				-0.158	-0.048	-0.157	-0.404	-0.251	-0.362
region==PR				0	0	0	0	0	0
reference professional index	-0.233**			-0.369			-0.641**		
index X region interacted effects:									
(region==MW)*reference professional index				0.079			0.409		
(region==So)*reference professional index				0.318			0.642**		
(region==We)*reference professional index				0.246			0.526*		
(region==PR)*reference professional index				0			0		
rural				0.03	0.005	0.027	0.012	-0.024	0.008
managerial occupations index		-0.278***			-0.301			-0.518**	
index X region interacted effects:									
(region==MW)*managerial occupations index					-0.383			-0.351	
(region==So)*managerial occupations index					0.222			0.505*	
(region==We)*managerial occupations index					0.113			0.335	

(continued)

Appendix 7B: Regression Output, General Internal Medicine Index (continued)

	OLS	OLS	OLS	OLS	OLS	OLS	WLS*	WLS*	WLS*
	on reference index	on managerial index	on all occup index	on reference index	on managerial index	on all occup index	on reference index	on managerial index	on all occup index
(region==PR)*all occupations index					0			0	
all occupations index			-0.297***			-0.334			-0.533**
index X region interacted effects:									
(region==MW)*all occupations index						-0.007			0.198
(region==So)*all occupations index						0.201			0.458
(region==We)*all occupations index						0.219			0.439
(region==PR)*all occupations index						0			0
Constant	1.276***	1.318***	1.345***	1.333***	1.284***	1.328***	1.599***	1.513***	1.539***
Observations	146	146	146	146	146	146	142	142	142
R-squared	0.041	0.055	0.066	0.181	0.201	0.182	0.184	0.215	0.175

* significant at 10%; ** significant at 5%; *** significant at 1%

* Estimated using BLS relative standard errors on the physician index as (inverse) weights.