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**GEOGRAPHIC VARIATION IN HEALTH CARE SPENDING AND
UTILIZATION IN SUBGROUPS: MEDICAID,
UNINSURED, AND
UNDOCUMENTED POPULATIONS**

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INTRODUCTION

Although variation in health care spending, use, and quality of care has been documented and analyzed extensively in the Medicare program, as summarized in a recent review (Skinner 2011), and researchers have turned their attention to the commercially insured population (Chernew et al. 2010), less is known about geographic variation in health care spending and utilization for important and vulnerable subgroups like Medicaid enrollees, the uninsured, and undocumented immigrants. For example, there is no systematic evidence on patterns of spending and care for enrollees in the Medicaid program, despite annual spending exceeding \$400 billion, for the 50 million uninsured in the US, or for the estimated 12 million undocumented immigrants. The Medicaid program has grown rapidly from a relatively small program at the time of its creation in 1965 to its present form. Together, state and federal spending on Medicaid now exceed spending on Medicare. With the passage of the Patient Protection and Affordable Care Act (PPACA), it is estimated that Medicaid will insure an additional 17 million individuals beginning in 2014 (Congressional Budget Office 2011). Understanding geographic variation in Medicaid, and its causes and consequences has therefore increased in importance.

The number of uninsured Americans has grown both in absolute terms and as a share of all non-elderly. Although as many as 32 million Americans may be newly insured by 2016 because of PPACA (Congressional Budget Office 2011), little is known about patterns of care for this group, as well as another largely uninsured population that was deliberately excluded from health reform, undocumented immigrants. This paper surveys the literature on the health care spending, utilization, and quality of care for three important and vulnerable subgroups of the population, those insured by Medicaid, the uninsured, and within this group, undocumented immigrants.

The paper is organized as follows. Section one describes the source of information and methods used to summarize the literature on variation in health care for these groups. Section two describes an overview of the population covered by Medicaid and briefly describes the type of data currently collected on Medicaid spending and utilization. Section three summarizes what is known about variation in the Medicaid program, its correlates, and how Medicaid spending variation relates to Medicare spending variation. Section four gives an overview of the uninsured population in the U.S., including undocumented immigrants, and data collected on these groups. Section five summarizes what is known about geographic variation for these groups, and given the virtual absence of any systematic analysis of health care use and spending across areas, it addresses gaps in available data and knowledge for these groups. Section six briefly discusses how PPACA's provisions may affect geographic variation for each of these subgroups. Section seven concludes.

1. Method to Collect Information on Variation in Special Subpopulations

For Medicaid, the uninsured, and undocumented populations, the paper begins with an overview of the populations studied, and in the case of Medicaid, with an overview of differences in Medicaid program eligibility rules and benefits across states. The maps and state level tables for these overviews come from the Kaiser Family Foundation’s State Health Facts (State Health Facts 2011), unless otherwise specified. A survey of the literature on geographic variation in utilization, spending, and quality of health care in specific subgroups was completed in several steps. First the online database, PubMed was searched for the following key words in any field “Medicaid spending variation”, and “Medicaid geographic variation.” These searches returned 30 and 64 articles respectively. Alternative search terms such as “Medicaid” and “Variation” yielded over 400 articles, but nearly all were focused on populations other than Medicaid, or variation such as patient level variation rather than geographic variation. In order to focus efforts on a health care system that more closely resembles the US health system in 2011, articles published prior to 1990 were excluded, though in practice this restriction was not binding. Articles that focused on Medicare spending, articles that focused on individual rather than area variation, and commentaries that presented no new empirical evidence were all excluded. After excluding articles based on these restrictions, only one peer-reviewed, published article on overall Medicaid spending remained, and nine other articles addressing geographic variation in a specific Medicaid service remained.

The search was expanded to include articles referenced in the articles above, to include unpublished work in progress, and to include other articles recommended by other health services researchers familiar with the literature on variations or familiar with literature on the special subpopulations of interest. In addition, because Medicaid pays for 43% of all nursing home care (Kaiser Commission on Medicaid and the Uninsured 2008) and covers 70% of nursing home residents, a search of variation in long term care was conducted. Finally, websites of the Congressional Budget Office, the Urban Institute, the Kaiser Family Foundation, the Robert Wood Johnson Foundation, and the Center for Studying Health System Change, and the National Bureau of Economic Research were searched. I also reviewed the forthcoming handbook of Health Economics Chapter on variations (Skinner 2012). This expanded search, which includes unpublished articles and non-peer-reviewed reports, yielded an additional 5 articles addressing overall variation in the Medicaid program, several dozen articles on state long term care policies, as well as dozens of articles on Medicaid drug policy. Ample evidence reveals that Medicaid spending variation is driven by long term care spending and inpatient spending. Despite the importance of long term care spending to variation across states in Medicaid outlays, the literature addresses variation in Medicaid long term care spending only indirectly, by assessing how Medicaid policy regarding long term care affects inpatient use, another important determinant of spending variation. Therefore, I focused my review of Medicaid long term care on articles that could most convincingly link state policies to such as bed hold policies, payments per diem in nursing homes, nursing home quality, and nursing home staffing to outcomes likely to generate increased spending, such as inpatient hospitalization. I conducted a similar set of searches for material on uninsured and

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undocumented populations, replacing “Medicaid” with “uninsured” or “undocumented.” In essence, there is no literature that specifically focuses on geographic variation in spending and utilization within the uninsured and undocumented populations. There are a handful of related articles that are discussed below. Before turning to a summary of variation in subpopulations, the following section provides an introduction to the Medicaid program.

2. Overview of Medicaid Program and its Enrollees

Demographics

The \$430 billion Medicaid program provides health insurance coverage and long-term care coverage to 54 million enrollees from a diverse set of low-income populations in the U.S. Nearly half of program enrollees are children. The remaining groups covered by Medicaid include non-disabled adults under age 65, mostly parents (23%), the blind and disabled (18%), and the remaining 10% are low-income elderly (Figure 1). Table 1 shows demographic characteristics of non-institutionalized Medicaid enrollees in 2009 based on estimates from the Current Population Survey. Compared with their share in the full population, minority groups are over-represented among Medicaid enrollees, consistent with the lower income in these groups and the fact that Medicaid is limited to individuals with low incomes.

Overview of Medicaid Financing and Spending

Although the federal government finances the majority of Medicaid spending¹, states cover the remainder at rates that vary from 24% in the poorest states to 50% in states with higher incomes. Figure 1 shows that spending in the Medicaid program is concentrated among the minority of enrollees who are disabled. Low-income children comprise nearly half of Medicaid enrollees, but only one fifth of Medicaid expenditures pay for insurance coverage of this group (CMS Office of the Actuary 2010). By far, the greatest share of Medicaid expenditures (44% in FY 2009) cover the blind/disabled. In comparison with their share of enrollees, the elderly also have relatively outsized spending, representing 22% of Medicaid expenditures.

Medicaid spending is particularly important for groups such as pregnant women, children living in low-income families, and nursing home residents. Forty-one percent of births are covered by Medicaid, and 70 percent of nursing home residents have Medicaid coverage. Half of low-income children are covered by Medicaid. The Medicaid program restricts enrollment to American citizens, legal residents who have lived in the country for at least 5 years, or in 18 states, legal immigrant children, pregnant women, or both, regardless of waiting periods.

¹ The federal share of Medicaid spending was about 2/3 in FY 2009 and in FY 2010 projections, in part due to the higher matching rates included in the American Recovery and Reinvestment Act of 2009 (CMS 2010).

An additional 7 million children living in families with income that is too high for Medicaid are insured through a state Children’s Health Insurance Program (CHIP), a state and federally financed program also administered by the Centers for Medicare and Medicaid Services. In practice, at \$10.6 billion dollars in 2009, or less than 2.5% of the Medicaid program outlays, the CHIP program is dwarfed by the Medicaid, and thus is not, by definition, a major source of spending variation for the publicly insured. In what follows, the CHIP program will not be addressed separately from Medicaid.

Geographic Distribution of Medicaid Enrollees and Spending Overall

The distribution of enrollees and spending in the Medicaid program is highly concentrated, just as the U.S. population is concentrated in a few states, as shown in Figure 2. Over half of Medicaid’s 59 million enrollees reside in just eight states (California, New York, Texas, Florida, Illinois, Pennsylvania, Ohio, and Michigan). Over one quarter of enrollees live in the two most populous states, California and New York. At the other end of the spectrum, the smallest 30 state Medicaid programs in terms of participants have less than 20 percent of all Medicaid enrollees. Total Medicaid spending is also highly concentrated (Figure 3). Eight states account for over half of the Medicaid program’s spending ((California, New York, Texas, Florida, Illinois, Pennsylvania, Ohio, and Massachusetts). California and New York together spend 24.8 percent of the nation’s Medicaid dollars. The 30 smallest Medicaid programs combined spend only 21 percent of Medicaid program dollars.

Variation in Eligibility and Coverage Across States

States vary dramatically in terms of eligibility requirements. This can be seen in Table 2, which shows the income limits for parents, as a percent of the federal poverty level. Some states require that parents have virtually no income to qualify for Medicaid, as in the case of Arkansas, with an income limit of 17% of the federal poverty level. In contrast, states like Minnesota allow parents to enroll in Medicaid with incomes up to 215% of poverty, and they can enroll in slightly less generous state-funded programs at income levels up to 275% of poverty. These eligibility differences, combined with demographic differences and differences in need across states, generate wide variation in the percent of a state population covered by Medicaid (Figure 4).

Variation in benefits by state

As summarized in the Kaiser Family Foundation’s *Medicaid at a Glance* (2008) States participating in the Medicaid program are required to cover the following services:

- inpatient hospital services, excluding mental disease
- outpatient hospital services
- Federally qualified health center services
- Rural health clinic services

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- Laboratory and x-ray services delivered outside a hospital or clinic
- Nursing facility services for beneficiaries aged 21 and older
- Physician services
- Certified pediatric and family nurse practitioner services
- Nurse mid-wife services
- Medical and surgical services of a dentist
- Early and Periodic Screening, Diagnosis and Treatment services for children
- Family planning services and supplies
- Home health services for beneficiaries who are entitled to nursing facility services under the state's Medicaid plan
- Pregnancy-related services and services for other conditions that might complicate pregnancy, as well as postpartum care

States may cover additional services (and still receive matching Federal funds), with approval. Some optional services are covered by all 50 state Medicaid programs and DC. For example, as of 2008, all 50 states and DC provided prescription drug services, with copayments varying from zero to \$3 per prescription. All states provided inpatient psychiatric services as well. However, 17 state Medicaid programs did not cover the services of psychologists, and 16 states did not cover physical therapy or speech therapy services. A significant minority of states, 20 did not cover occupational therapy services.

Although states vary in terms of how/whether they cover a given service, differences in the way in which states a) pay for that service; and b) deliver the service are more dramatic and may account for more variation in spending or quality of care across states. For example, regarding the delivery of health services 11 states devote over half of acute care spending to managed care and health plans, while managed care comprised less than one quarter of acute care spending in 25 states. Regarding differences in payments, physician fee rates vary widely across states, both in absolute value and relative to Medicare payments. Figure 5 displays the variation across states in the physician fee index, with 1 representing the national average fee index.

A second area of variation is in the pricing of prescription drugs since states select drug formularies and negotiate prices individually. Even for the same drug, studies suggest that pharmaceutical prices vary widely, often by a factor of 2, 10 or higher (Department of Health and Human Services 2004). However, prescription drugs account for only a small fraction of overall spending, only 5.3% of Medicaid spending reported in the National Health Expenditures Tables for 2009 (Centers for Medicare and Medicaid Services 2011). This share fell dramatically after dual-eligible drug coverage was moved into Medicare's part D program.

Similarly, states vary dramatically in the importance of Disproportionate Share Hospital (DSH) Payments to the Medicaid program. In four states (Alabama, Louisiana, New Hampshire, and New Jersey), DSH payments exceed 10% of the state's Medicaid spending. Overall, though, DSH payments represent only 4.8% of

Medicaid spending in 2009. These differences mask important within state differences in the allocation of DSH funds. Traditionally, these funds go to a few safety net providers, and thus changes in these funds can have a dramatic impact on access to care for Medicaid, uninsured, and undocumented populations.

In terms of spending, long term care represents the largest service category in Medicaid. Long-term care comprises more than one-third of Medicaid spending (Kaiser Commission on Medicaid and the Uninsured 2008), and thus state policies that affect eligibility for long term care, the generosity of reimbursement for long-term care, or the delivery of these services can affect the quantity and quality of services delivered. States have ample discretion over policies, and they exercise this discretion in ways that have significant impact on utilization and spending for long term care (Miller 2002). Variation in long-term care policies is addressed more fully in Section 3.

CMS Data on Medicaid Spending

There are a variety of data sources collected and processed by CMS on the Medicaid program. Since 1999, states have been required to submit claims data to CMS. These Medicaid Statistical Information System (MSIS) data provide data on Medicaid spending and claims. On the CMS website, aggregated MSIS data are available according to service category, age group, eligibility category, and other demographic factors. CMS processes the MSIS data to create the Medicaid analytic extract files, now available for 1999-2008. These are person level files, compiled by calendar year to reflect adjudicated claims, eligibility and payments for all Medicaid enrollees, regardless of service use. There are five separate MAX related data sets. The Person Summary file includes Medicaid eligibility and demographics, managed care enrollment, summary measures of utilization and Medicaid payments by type of service. There are four claims files, one each for inpatient care, long-term care, other services, and prescription drugs. These files include both fee-for-service claims, and managed care encounter data.

In 2005, the MAX data increased the level of available detail regarding Long Term Care community based services as well as more detailed information regarding the race and ethnicity of enrollees. Researchers may access MAX files through the Research Data Assistance Center with appropriately reviewed research protocols and a Data Use Agreement, as well as a fee for data processing costs. With data now available for 2008, the MAX files are relatively current, although in practice the barriers to outside research with these data appear to contribute to long publication lags. For example, several 2011 studies reviewed in this paper reference data from 2005 or earlier.

Finally, CMS collects CMS-64 reports (quarterly expense reports). The CMS-64 reports reflect actual expenditures paid by states, targeting expenditures for which federal reimbursement is eligible. These reflect actual Medicaid claims made. CMS compiles state level estimates of their National Health Expenditure (NHE) Data using CMS-64 reports. For these estimates, the CMS-64 reports are modified to

follow the NHE approach of grouping spending by the provider reporting that spending. Furthermore, although CMS-64 do count DSH payments, CMS state health expenditure estimates do not count DSH payments that are offset by taxes or intergovernmental transfers.

CMS reports health expenditures by state of provider and state of residence separately, although for Medicaid, because eligibility depends on state of residence, state of provider and state of residence are assumed to be the same. The impact of this assumption will vary across geographic areas. This assumption will prove to be more important when providers operate near state borders, however. Thus, there is some debate regarding the appropriateness of these measures for estimating geographic variation (Cooper 2009; Rettenmaier and Saving 2010; Skinner 2012). Another drawback of CMS state health expenditure estimates is that as of November 2011, the most recent year for which data are available is 2004. Thus, these data are becoming outdated rapidly in an era when health reform promises to induce profound changes in the nature of the Medicaid program.

There are ample sources of data that can be used to learn about Medicaid spending variation, although these may be more limited in scope. To track trends in inpatient care, one can turn to the Healthcare Cost and Utilization Project from the Agency for Health Care Policy and Research. The National Inpatient Sample from these data draws on discharge records from a 20 percent sample of US hospitals. These data have been used to study ambulatory sensitive conditions in Medicaid and uninsured populations in 1990 and 1995 (Friedman et al. 1999).

A promising development for future data analysis is the ongoing initiative to link Medicaid MAX files to four National Center for Health Statistics Surveys: The National Health Interview Survey, The National Health and Nutrition Examination Survey, The National Nursing Home Survey, and The Second Longitudinal Study of Aging. These nationally representative surveys include health behavior, insurance, household composition, and other demographic information for nationally representative samples of individuals, in most cases focused on community dwelling populations. The NNS samples individuals residing in nursing homes as well as nursing home providers. This effort, started in 2010 and planned through 2013, will link Medicaid MAX data from 1999-2009 to data for selected survey years between 1994 and 2005. These linked data will be accessible to authorized researchers through an NCHS Research Data Center.

For state level aggregated data, the compilation of statistics at the Kaiser Family Foundation State Health Facts website offers a wealth of easily accessible information.

3. Geographic Variation in Medicaid Spending, Utilization, and Quality

Variation in Medicaid Spending Across States – Aggregate Spending

Although the broad variation in Medicaid spending has been described briefly in the context of other work about health spending overall (Holahan and Liska 1997; Martin et al. 2007; Rettenmaier and Saving 2010), scant work exists characterizing geographic variation in spending within the Medicaid program in any detail. The six available studies that characterize aggregate spending variation in Medicaid are described in Table 3. Each of these studies focuses primarily on state level spending, a reasonable approach given that each state administers its own Medicaid program with very different eligibility rules, benefit designs, and service delivery approaches. The available information provides two points of consensus. Regardless of how Medicaid spending is measured, substantial variation across states exists, and this variation exceeds variation documented in the Medicare program (Martin et al. 2007; Cooper 2009; Rettenmaier and Savings 2010; Autor, Chandra and Duggan 2011; and Gilmer and Kronick 2011). Second, long-term care services along with inpatient spending tend to drive the wide dispersion in Medicaid spending across geographic areas. Finally, differences in the number of services used, especially inpatient services and long term care, rather than differences in prices across Medicaid programs, seem to explain most of the cross-state variation in Medicaid spending. So far, no published or circulating study on Medicaid spending variation documents a positive correlation between Medicare and Medicaid spending at the state level, a point addressed in the section on the correlation between Medicare in Medicaid. Of the studies above, only the last two made overall variation in Medicaid spending a focus of the analysis. These are described in more detail below.

Autor, Chandra and Duggan (2011) analyzed the claims of a 10% sample of disabled adult Medicaid beneficiaries in 11 states (California, Florida, Georgia, Illinois, Nevada, New Jersey, New York, Ohio, Texas, Wisconsin, and West Virginia). The authors split out spending on enrollees eligible only for Medicaid, disabled dual-eligibles, and disabled Medicare-only enrollees. Among the Medicaid only group, annual Medicaid spending in New York state was about \$10,000 higher than mean spending of \$13,999 for Medicaid-only enrollees. Among dual-eligibles, the discrepancy in state-level Medicaid spending per enrollee was equally large; New York's spending exceeded the mean Medicaid spending of \$12,543 by over \$11,000. At the other end of the spectrum, West Virginia spent over \$5,000 less than average. To put this \$16,000 spread in spending between the most and least expensive state in context, state-level Medicare reimbursements per beneficiary in 2005 differed by under \$4,000 comparing the least and most expensive states (The Dartmouth Atlas Project 2011). In this sample of disabled adults, the authors found the coefficient of variation for Medicaid spending was markedly higher (.40) compared with that reported for Medicare spending (.11).

This same analysis demonstrates several related points regarding variation in the Medicaid program. First, the stark differences in Medicaid spending on the disabled cannot be explained by differences in demographics characteristics across states. Second, spending variation was driven by variation in inpatient and long-term care spending. Third, for long term care and inpatient care, the majority of spending

variation stemmed from differences in the quantity of care, rather than differences in price across states.

A recent study by Gilmer and Kronick (2011) analyzed state-level Medicaid spending based on administrative data from all states in the Medicaid Analytic eXtract system. Gilmer and Kronick focused on annual spending for acute care services for cash assistance, Medicaid-only, disabled (CAMOD) enrollees between 2001 and 2005. They further decomposed spending variation into the share of spending variation attributable to price versus volume differences. Finally, in HRR level analyses, the authors predicted hospital admissions overall and for four ambulatory sensitive conditions as a function of acute care beds, primary care physicians, and specialist physicians per 1,000 residents in an HRR, controlling for disease burden and Medicaid managed care penetration.

Like others before, Gilmer and Kronick demonstrated substantial variation in Medicaid spending across states, even excluding expensive long-term care services. A detailed appendix described variation in spending for all Medicaid enrollees, and included long-term care and other non-acute services. The appendix further illustrates that variation in Medicaid spending across states is greatest for long term care services, and for mental health services. In the cash assistance Medicaid-only disabled population, spending variation including non-acute spending categories was even more dramatic. In the five states with the highest annual spending per Medicaid enrollee, spending exceeded \$20,000, compared with spending levels under \$9,000 in the five states with the lowest Medicaid spending per enrollee.

Consistent with the work of Autor et al. (2011), Gilmer and Kronick document two important patterns regarding Medicaid spending variation. They confirm that the volume of services appears to be a more important driver of spending differences than price. They estimate that volume accounts for about 2/3 of spending differences, with price differences accounting for the remaining variation in spending across states. Second, like Autor, Chandra, and Duggan (2011), they document that long term care drives much of the variation in spending across states. This is not surprising given that long term care spending accounts for a larger share of Medicaid dollars than any other service category, and it has greater variance than inpatient or physician spending. Importantly, Gilmer and Kronick documented no relationship between total Medicaid spending and hospitalization for ambulatory sensitive conditions.

Gilmer and Kronick explored the relationship between area level spending and utilization patterns in more detail. They related hospital admissions, outpatient visits, and admissions for ambulatory sensitive conditions to various supply factors in an HRR including the number of acute care hospital beds, the number of specialists, and the number of primary care physicians (all expressed per 1,000 patients). In addition, the authors related hospital admissions to Medicaid program characteristics such as the average payment per hospital day, the average payment per outpatient visit, and the mix of medications prescribed.

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Measures of market supply were strongly correlated with utilization measures. Intensity of care in an HRR rose with acute care beds and specialists per 1,000 population. These predicted higher admissions both overall and for four ambulatory care-sensitive conditions. In contrast, the number of primary care physicians per 1,000 was inversely related to overall hospital admissions for three of the four ambulatory sensitive care conditions (diabetes, chronic obstructive pulmonary disease, and adult asthma).

Another provocative correlation revealed in this analysis was the positive relationship between payment rates by setting. The number of outpatient visits in an HRR and the average payment per outpatient visit were negatively related to overall hospital admissions. Similarly, higher average hospital payments per day were positively related to admissions overall and for three ambulatory sensitive conditions. At a regional level, areas of the country with higher outpatient spending tended to have lower inpatient spending. Measured disease burden was higher in high spending states, but evidence suggests that the measurement of disease burden in administrative data is influenced by the intensity of care in that region (Song et al. 2010).

The analyses of supply factors yielded interesting results, though they should be interpreted as associations rather than causal in this cross-sectional framework. Many potential unmeasured factors could influence both supply factors and utilization patterns to generate these findings. For example, higher average payment rates per hospital day can reflect multiple factors correlated with both payment rates and hospital admissions such as the underlying health of the population (in ways not measured in claims data), or strong preferences within a state for care in a hospital based rather than outpatient settings. Still, the Gilmer and Kronick results are broadly consistent with findings in the Medicare literature on variations.

Variation in Medicaid Spending Across States - Long Term Care

Long-term care drives much of the spending variation in Medicaid populations, and thus any study of long term care variation has relevance for variation in Medicaid spending and utilization. Although all states cover care in nursing facilities, state policies regarding Medicaid payments to long-term facilities vary widely, and the extent of coverage across settings also varies. An early study in this area used Administration on Aging reported data on 1992 state long term care spending per person, as well as state Home and Community Based Services spending per person (Kane et al. 1998). The authors confirm wide variation in long term care spending across states. They also find little evidence that HCBS spending substitutes for nursing home spending. That is, states with high levels of spending in nursing homes also had high levels of spending on home and community based services. They related long term care spending to state demographics and state income, and measures of nursing home bed supply per 1000 individuals over age 85. Demographics and state income explained the majority of variation across states in long term care spending.

Since the mid-1990s, a series of papers have evaluated how differences in state Medicaid policies affect a variety of outcomes relating to Medicaid spending and quality, as well as spillovers in the Medicare program. In this work, the researchers focus on how per diem nursing home payments, bed-hold policies, and case mix adjustment affect outcomes such as re-hospitalization rates for nursing home residents (Intrator et al. 2007; Intrator and Mor 2004; Intrator et al. 2009) and nursing home quality measures (Grabowski, Angelelli and Mor 2004; Mor et al. 2011). They also demonstrate changes in staffing arrangements in response to reimbursement policies (Cohen and Spector 1996; Grabowski 2001; Grabowski et al. 2004; Intrator et al. 2005). Although these are indirect measures of Medicaid utilization, they seem plausibly linked to the spending variation documented across states in Medicaid. Thus, these studies are included to provide clues regarding how state policies influence quality (rehospitalization, adverse outcomes for nursing home patients) that likely increases spending because of the use of expensive inpatient settings, or because of potentially costly complications and care required to address adverse events like bed sores.

To study the impact of state policies on long term care spending, the researchers cited above linked national nursing home data on quality measures such as pressure ulcers, use of physical restraints, functional decline, and pain from the Minimum Data Set with Medicaid policies, information on facility characteristics from the On- Line Survey, Certification, and Reporting System, with county level characteristics from the Area Resource File such as median income, hospital wage index, population and in two cases these data were linked with Medicare administrative data on hospitalization and other services. These studies were mostly cross-sectional at particular points in time between the early 1990s and 2000. In general, more favorable per diem payment rates are associated with better quality measures (Grabowski et al. 2004; Mor et al. 2011), and lower hospital admission rates (Intrator et al. 2007; Intrator and Mor 2004; Intrator et al. 2009).

Furthermore, the effects of payment rates on quality are even stronger for black nursing home residents than white residents (Gruneir et al. 2008). The more recent work in this area (Mor et al. 2011) is more robust because the authors exploited changes in payment rates within states over time (1999-2005), although the results of these analyses are broadly consistent with earlier work. States with more generous payments have better nursing home quality, as measured by the likelihood of meeting quality thresholds for functional decline, pain control, and pressure ulcers, for example (Mor et al. 2011). Using similar methods and approaches, evidence suggests that some variation in the staffing of nursing homes stems from differences across states in payment rates. Lower payment rates (both at a point in time, and within states over time) are associated with fewer staff, and fewer nurse practitioners or physician assistants (Cohen and Spector 1996; Grabowski 2001; Grabowski et al. 2004; Intrator et al. 2005).

Another finding from this research is the unintended consequence of state policies designed to increase continuity of care. Bed-holds, or paying nursing homes to reserve a spot for residents who leave temporarily due to hospitalization, increases

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the continuity of nursing home care by reducing transfers to other nursing homes (9.5 fewer per 1,000 residents), but it is associated with 78 more Medicare paid hospitalizations per 1,000 residents each year (Intrator et al. 2009). Thus, continuity of care comes at a steep price in terms of funding care for nursing home residents. Taken together, variation across states in reimbursement rates seems to affect measured nursing home quality, as well as increase the qualifications of staff members. These changes may be expected to lower Medicaid spending, although the increased staffing will raise the cost of delivering care to nursing home residents. Higher Medicaid reimbursement rates may reduce total Medicaid spending by reducing hospitalization, but the higher reimbursement rates may outweigh the savings from averted hospitalizations. Even without cost savings, the reimbursement rates seem to improve quality, and may explain variation in the quality of care across states, and across nursing homes within states.

Variation in Medicaid Spending Across States – Prescription Drug Spending and Utilization

By 2020, it is estimated that prescription drug spending will consume 20 percent of the Medicare budget. For Medicaid dual eligibles, the group driving much of the spending variation across states, recipients receive drug coverage through Medicare Part D. Thus, although pharmaceutical use currently contributes less than 10 percent of total Medicaid spending, it is important to understand which policies may influence trends over drug utilization given their increasing importance as a share of all health care. Below I review studies of drug utilization as a function of Medicaid policies.

Because of state discretion over drug formularies, policies such as cost sharing and prior authorization requirements, and because states negotiate drug prices for Medicaid individually (either directly or through a pharmacy benefit manager), one would expect the utilization of prescription drugs and spending on those drugs to vary widely across states. Even though prescription drug spending represents a small portion of total Medicaid spending, the implications for both spending and quality of care if policies designed to reduce spending dampen the use of effective medication as was the case in New Hampshire's use of prescription drug caps led to a rise in use of emergency services and partial hospitalization for schizophrenic patients (Soumerai et al. 1994) or when California increased copayments for its retired employee prescription drug benefits (Chandra, Gruber and McKnight 2010) and inpatient care utilization increased. One should note that each of the studies reviewed below reflects Medicaid prescription drug utilization in the era before Medicare part D, when dually-eligible Medicaid enrollees were shifted from Medicaid to Medicare part D for prescription drug services. Because dual eligibles use more health care services, including prescription drugs, this shift to part D cut in half drug spending as a share of all Medicaid spending.

A 2002 study of dual-eligible beneficiaries examined prescription drug use, reimbursements, and benefit design for 10 states in a CMS data base linking Medicaid and Medicare claims for dual-eligibles, for services provided between 1994 and 1996 (Schore, Brown and Mathematica Policy Research 2002). As in other parts of health care, use of prescriptions and spending varied widely across states.

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California had the lowest average prescription fills, at 1.9 per month compared with Indiana, where dual eligibles filled an average of 5.1 prescriptions per month. Not surprisingly, variation in pharmacy reimbursements were similarly skewed. California had the lowest reimbursement per month at \$62 and Indiana was highest at \$131. The paper described prescription limits, supply restrictions (ie 100-day supply), co-payments, and whether drug formularies were open or closed in a state. Not surprisingly, the state with the lowest spending on drugs, California, had more limits on prescriptions via caps on prescriptions and a closed drug formulary. Indiana did not have either of these, but it did impose co-payments of \$.50-\$3.00 per prescription. In this descriptive analysis, it was not possible to link pharmacy benefit policies to spending or outcomes, however, as the health of dual eligible varied considerably across states. For example, claims-based diagnoses of high-cost heart conditions were nearly three times as likely in Indiana as in California. Some of these differences may relate to differences in the propensity to code a particular illness, but in this study, there is no way to adjust for these differences.

Another article on year 2000 Medicaid drug spending compared reimbursements across states for drugs available in both branded and generic formulations (Fischer and Avorn 2003). The primary finding in this study was that the use of generics varied widely, contributing to significant spending variation on prescription drugs across states. The authors estimated that Medicaid could have saved 6 percent of pharmacy reimbursements by using generic drugs in states that were high users of branded drugs in classes with generic alternatives. The potential savings from prescribing generics over branded drugs ranged from 3 to 10 percent of spending on those drugs with both brand and generics available. They further documented that most of the brand prescribing occurred because physicians wrote prescriptions stipulating no substitution. The direct savings from switching to generics is relatively modest compared with Medicaid budgets, however.

There are multiple studies that describe Medicaid variation in use of specific prescription drugs or classes of prescription drugs. Three of these studies are purely descriptive and characterize wide variation in the use of particular agents or classes of drugs (Baugh et al. 2004; Wetmore et al. 2011; Zerzan et al. 2006).

For example, a recent study characterized broad variation in the odds of using cardioprotective antihypertensive medication in dialysis patients dually eligible for Medicaid and Medicare, based on 2005 Medicaid prescription drug claims (Wetmore 2011). The authors compared observed odds of receiving these medications in each state, with the predicted odds of receiving these medications in a state based on other characteristics of patients in that state, but the study does not explore reasons for the broad variation.

A second study examined the use of prescription drugs in Medicaid during 1996-1998 in 29 states available in the State Medicaid Research Files, separating out drugs by therapeutic category (Baugh et al. 2004). Because central nervous system drugs consumed the most dollars, they described substantial variation in the numbers of prescriptions and spending on prescriptions across states. Of all central nervous system drug classes, the spending variation was greatest for use of antipsychotics.

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In another descriptive study of Medicaid prescription drug data, researchers described opiate medication use in the prescription drug files from state Medicaid fee for service programs in 1996 and 2002 (Zerzan et al. 2006). Opiate dispensing already varied widely in 1996, with a seven-fold difference in the defined daily use per 1000 Medicaid adult enrollees per day. However, by 2002, this difference had grown to a 23-fold difference (Coefficient of Variation = 49.6). Because controlled release oxycodone grew more rapidly than use of other opiates over this period, a related paper used the same data to test the hypothesis that Medicaid prior authorization policies tempered its growth (Morden et al. 2008). The 21 states that introduced prior authorization for oxycodone between 1996 and 2002 experienced a statistically insignificant decrease in controlled release oxycodone use, compared with other states. Unlike other prescription drugs, prior authorization policies had little impact on prescription claims for oxycodone.

The investigation of prior authorization policies for expensive prescription drugs represents another area of Medicaid drug research that is related to geographic variation in spending and utilization, but not directly focused on how these policies contribute to or mitigate spending variation across states. An influential study in this area analyzed whether Medicaid policies requiring prior authorization for the prescription of cyclooxygenase-2 inhibitors implemented between 1999 and 2003 affected their use (Fischer et al. 2004). The authors determined that implementation of PA reduced the use of these drugs as a share of nonsteroidal anti-inflammatory drugs by 15 percent, lowering spending per prescription by \$10.28. Similar policies in other more expensive drug classes with expensive drugs of unproven or equivocal benefits offer the potential to dampen spending variation in this increasingly important area of Medicaid spending.

Variation in Medicaid Spending Across States – Other Specific Services

The remaining literature that touched on variation in the Medicaid program focused on specific service categories, including relatively broad categories such as ambulatory care, mental health services for children and variations in payments and utilization of dental services, but also more specific services designed to measure recommended care such as metabolic testing in second-generation antipsychotic users. These studies give a richer picture of specific services, but these particular papers cannot explain much of the wide variation in Medicaid spending and utilization, since these specific services represent a relatively small portion of the program.

In the area of mental health services, a 2008 study analyzed variation in Medicaid mental health service use and spending for children in 23 states (Howell and Teich 2008). This study analyzes 1999 data from the Medicaid Analytic Extract files, focusing on the population 21 and younger. The authors first demonstrate a wide range in the share of children in fee-for-service Medicaid that have a mental health diagnosis on a claim. Maine tops the states with over 16 percent of its Medicaid children, compared with Texas, for whom less than 6 percent of children have a mental health diagnosis. Not surprisingly, this rate of diagnosis relates to a stark difference in the share of total fee-for-service expenditures accounted for by mental health services (over 60% in Maine, compared with under 15 percent in Louisiana

and Texas. Within the group of children covered by Medicaid, differences in mental health service use account for a large share of spending, and differences in spending across states.

One paper assessed variation in ambulatory care patterns across counties in Maryland's Medicaid program in 1988 controlling for case mix of patients (Weiner et al. 1996). After controlling for case mix using Ambulatory Care Group measures, the authors found wide variation in the number of visits, pharmacy use, and hospitalizations. The authors did not examine these cross county differences any further. An analysis of differences in resource use across physician practices also documented wide variation in visits and other services. Patient characteristics explained nearly half of the variation in ambulatory visits across 647 physicians in solo practice.

A recent paper used Medicaid claims from California, Missouri and Oregon to compare rates of glucose and lipid testing among antipsychotic users across 207 counties (Morrato et al. 2011). Both the American Diabetes Association and American Psychiatric Association recommend metabolic monitoring for patients using second generation antipsychotics. The authors documented four-fold differences in glucose testing across counties (21-85%), and even greater differences in lipid testing rates (0-62%). These analyses were descriptive, however, so they do not present any interpretation of the differences, nor can they explain them based on geographic or policy factors.

A unique study in the New York State Medicaid program analyzed Medicaid claims for caries-related dental care for children in 57 counties and New York City during 2006 (Kumar, Adekugbe and Melnik 2010). The authors correlated the presence of caries-related claims with access to fluoridated water in a county. The study documented a strong negative correlation (-0.54, $p < 0.0001$) between the extent of fluoridation in a county and claims for caries related services, but not for other dental services.

Correlation Between Medicare and Medicaid spending

Recent analyses have raised the question of whether Medicare spending in an area is negatively correlated with other types of spending (Chernew et al. 2010). These and other authors have raised the possibility that states spending a lot on Medicare beneficiaries spend less on other insured populations, including Medicaid. Table 4 expands upon the scant evidence on this point. In the only two examples of papers that directly compute such a correlation (at the state level), there is no measured correlation between unadjusted state Medicaid spending per enrollee and state Medicare spending per beneficiary (Cooper 2009; Rettenmaier and Saving 2010).

In the study by Autor et al. (2011), the authors interpret their data as suggesting a negative correlation between Medicare and Medicaid spending, but they do not present any direct measures of this. Using data from their paper, the correlation between the state fixed effects in the Medicaid models and those in the Medicare models (for dual-eligibles) is .09. The state effects in models of Medicaid-only spending show similarly low levels of correlation with the state effects in the

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Medicare-only models. However, a careful analysis of Medicare and Medicaid spending, adjusting for price effects would be instructive. Figure 6 shows how price adjustment changes the interpretation of the correlation between Medicare and Medicaid spending. The top panel displays a scatter plot of state level age-sex-race adjusted Medicare spending in 2005 against state level Medicaid spending 2001-2005 standardized to the overall distribution by eligibility category. The lower panel shows what happens if one compares the same figures after adjusting for price differences. Medicaid spending was adjusted by the price effects (i.e. the ratio between spending without any price adjustment and spending net of the computed price effects) in Gilmer and Kronick (2011), using Medicare price effects in the five states for which Gilmer and Kronick did not compute these.

In one unpublished comparison of Medicare & Medicaid spending among under age 65 Dual eligibles, one study found that a) the variation in Medicaid spending was much larger than that for Medicare spending at the state level and b) if anything, Medicaid and Medicare spending were negatively correlated, consistent with a story in which states try to shift spending toward Medicare (100% federally funded) from Medicaid (jointly financed by state and federal funds).

4. Overview of the Uninsured and Undocumented Immigrants

Who are the uninsured?

Nearly 50 million Americans, or 16.3 percent of the U.S. population were uninsured in 2010 based on estimates from the 2011 Current Population Survey (Assistant Secretary for Planning and Evaluation 2011). This group is younger than the overall population; they are disproportionately represented in the 18-34 age group (Table 1). Rates of uninsurance are higher in minority groups; 30.7 percent of Hispanics, 20.8 percent of Blacks, and 18.1 percent of Asians lacked health insurance in 2010. The uninsured also have lower incomes compared with the overall population, although a significant minority of the uninsured, 37%, have household incomes above \$50,000 (Table 1). Most uninsured individuals live in households with at least one worker. Although working full-time lowers the chance of being uninsured to 15 percent, rates of uninsurance are high among part-time workers at 28.5 percent. Approximately 1 in 7 uninsured individuals are undocumented immigrants, and both the number and share of uninsured undocumented immigrants has grown since 1999 (Zuckerman, Waidmann and Lawton 2011).

Who are the Undocumented?

It is more difficult to get precise estimates of the undocumented population because surveys do not capture legal status. However, estimates suggest that this population mirrors the overall uninsured in some, but not all ways. Of the 11.1 million undocumented immigrants in the U.S., an estimated 58% are from Mexico, 23% come from other Latin American countries, and 11% come from Asia (Passel and Cohn 2010). A disproportionate share of undocumented immigrants are young adults between the ages of 18 and 39. In 1999-2007, so before the recent recession, about 42 percent lived in or near poverty (133% of federal poverty levels) and they were slightly less likely to be unemployed than native born or permanent residents, and they work disproportionately in small businesses with fewer than 25 workers

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(Zuckerman, Waidmann and Lawton 2011). A more recent estimate of unemployment in this population suggests undocumented immigrants face slightly higher rates of unemployment compared with native-born citizens, 10.4% versus 9.2% (Passel and Cohn 2009).

Financing Care for the Uninsured including Undocumented Immigrants

As the Committee on the Consequences of Uninsurance aptly described in a 2003 report, “Responsibility for financing and providing health care to uninsured persons in the United States is fragmented and ill defined” (Institute of Medicine Committee on the Consequences of Uninsurance 2003). Based on 2008 estimates, the uninsured pay for 35 percent of their care out of pocket. Of the remaining uncompensated health care, public programs finance about 75 percent of uncompensated care (Hadley et al. 2008).

The 2003 IOM report further details sources of financing for the uninsured (Institute of Medicine Committee on the Consequences of Uninsurance 2003). At the federal level, to the extent that individuals are not eligible for public insurance coverage through Medicaid, Medicare, or a Children’s Health Insurance Program, federal financing supports service delivery to the uninsured through community health centers, Department of Veterans Affairs facilities, and Disproportionate Share Programs to compensate hospitals that serve large shares of medically indigent patients. States play a role in financing the uninsured through state financed programs not eligible for matching funds. Sometimes these are state financed expansions of Medicaid or a children’s health insurance program, but often they are not, as in the case of state services for the severely mentally ill, financed through a state department of mental health. At the local level, county hospitals and public clinics provide services to the uninsured, as do philanthropy to hospitals and other health care providers, and care not billed by physicians. Based on the most recent estimates of financing of uncompensated care, private philanthropy is estimated at roughly \$6.3 billion, and it is estimated that physicians deliver up to \$7.8 billion in free or reduced-priced care to uninsured patients (Hadley et al. 2008).

Data Collected on Uninsured and Undocumented Populations

There is no single coordinated data collection effort on uninsured or undocumented populations. However, there are a number of available data sources that can broaden our knowledge of these groups.

For the uninsured in general, many national surveys collect information on health insurance status. Most official estimates of insurance status come from the Current Population Survey, the American Community Survey, or the Behavioral Risk Factor Surveillance System (BRFSS). Slight differences in sampling frame and questions yield slightly different rates of uninsurance, but the patterns across areas (more uninsurance in the South and Western U.S., higher rates among blacks and Hispanics) are consistent.

To learn in more detail about service utilization among the uninsured, numerous national surveys include information on insurance status and information about

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health behaviors, health conditions, or even health outcomes. These include the National Health Interview Survey, the Medical Expenditure Panel Survey, the National Health and Nutrition Examination Surveys, and the BRFSS. However, only the BRFSS was designed with sampling frames that were intended for state or other geographic estimates in mind. Still, use of restricted data files for the NHIS and MEPS (which would provide access to state identifiers) could augment knowledge of differences in utilization for the uninsured across areas. Additional utilization information for uninsured populations can be obtained from hospital discharge data. Many states maintain all payer discharge data, and the Agency for Health Care Research and Quality maintains a variety of all payer databases like the National Inpatient Sample, based on a sample of over 7 million admissions to over 1,000 U.S. hospitals available annually through 2009. AHRQ also maintains state level inpatient databases, national and state emergency department databases, ambulatory surgery center data, and a child specific inpatient sample database. Health care delivered in some ambulatory settings is captured by the National Ambulatory Care and National Ambulatory Hospital Care Surveys, also available through 2009. Health care services for uninsured populations can also be tracked in the Community Tracking Study, a household survey of non-institutionalized individuals in 60 communities.

Evidence on undocumented populations is less organized, but researchers have demonstrated creative ways to use existing data sources to learn more about this population, primarily at the national level. Examples of data sources used in research on health care spending and utilization in undocumented populations, along with major assumptions and limitations of each source are shown in Table 5. For the purpose of looking across areas, one can use the Current Population Survey to learn about insurance status of non-citizens across areas, the Medical Expenditure Panel, to learn about use of health care by non-citizens (both with and without health insurance), and Medicaid data yield some interesting information regarding the use of emergency services, since undocumented immigrants who are otherwise eligible for Medicaid (except for citizenship requirements) can use emergency services in Medicaid.

5. Geographic Variation in the Uninsured Population

Geographic Variation in the Uninsured and Undocumented Population

The wide variation in rates of uninsurance across states has been extensively documented. However, the research on geographic variation in uninsured populations primarily stops there. Figures 7 and 8 use data from Kaiser State Health facts to illustrate this in more detail. Based on the 2009 American Community Survey, in the five states with the lowest level of coverage over 90 percent of the population has health insurance. In contrast, more than 1 in five residents in New Mexico, Florida, Alaska, Nevada, and Texas lacks insurance coverage. If one restricts the population to those with less than 139% of federal poverty levels, as Figure 8 does, the level of uninsurance is higher in all states, but the dispersion in insurance rates across states remains high. The large population in states like California, Texas, and Florida, all of which have high rates of uninsured, imply that the uninsured population, like the Medicaid population, is not distributed evenly across

the US.

Similarly, undocumented immigrants are concentrated in certain areas of the country. Passel and Cohn (2009) estimate that 69% of undocumented immigrants live in six states: California, Texas, Florida, Illinois, New Jersey, and Arizona. However, these states used to have 80% of undocumented immigrants in the U.S., suggesting that these populations are moving to other areas of the country. An analysis of state variation in who will be uninsured under health reform projects high numbers of undocumented immigrants in these same states (Buettgens and Hall 2011).

One of only three articles on geographic variation in the uninsured in the peer reviewed literature comes from a recent study of uninsurance rates across states and across metropolitan areas using 2006 data in the BRFSS (Ahluwalia et al. 2009). This report adds to the information on variation in uninsurance rates because it shows that state estimates mask substantial variation within states, and for important subgroups. For example, in states like North Carolina and Oklahoma, rates of uninsurance in Hispanic populations exceeded 50 percent. Blacks in several southern states had uninsurance rates that often exceed 30 percent. Many Western and Southern metropolitan areas had measured rates of uninsurance that exceeded 20 or even 30 percent. In El Paso, Texas, 46 percent of its residents lacked health insurance in 2006. If one considers the patchwork of financing for health care to the uninsured, these rates can impose substantial hardships on health providers in those communities.

There is a paucity of research analyzing geographic variation in health care spending or quality for uninsured populations, but the search described above revealed two articles regarding measures of geographic variation related to access to care for the uninsured. Although the studies are descriptive at best, and do not illuminate our question regarding sources of spending and outcome variations across areas, they do point to future areas of research and promising sources of data to pursue further research. For example, researchers have analyzed patterns of uninsurance in the 1996-97 Community Tracking Study, a 60 community household survey of the non- institutionalized population (Cunningham and Kemper 1998). The share of uninsured individuals reporting they had difficulty receiving needed medical care varied from 41.4 to 18.5 percent across communities, but this difference did not change substantially with controls for socioeconomic status or health status. The authors also compared the rate of difficulty obtaining medical care among the uninsured to reported rates for privately insured respondents in the same community, but the correlation was near zero (correlation coefficient = 0.04). This suggests an important distinction in sources of care for undocumented versus privately insured respondents. That is, policies that change care patterns in private populations would not necessarily lead to reductions in variation in undocumented populations.

Aside from projections regarding geographic differences in uninsured undocumented immigrants after PPACA takes effect, there was no evidence of research on geographic variation in spending or care for undocumented immigrants.

However, there are several recent studies of undocumented populations that yield some important, and until recently unknown facts regarding health insurance and medical spending among the uninsured. Based on the Los Angeles Family and Neighborhood study, a 2000-2001 survey of a sample of families living in 65 census tracts in Los Angeles County, Goldman and colleagues first estimated that 68 percent of undocumented immigrants in Los Angeles were uninsured and 65 percent of undocumented immigrants were always uninsured over the prior 2 years. By imputing per capita medical spending in the MEPS, as a function of demographics and use of inpatient and outpatient services reported in the LAFANS, Goldman and colleagues were able to estimate annual per capita medical spending based on legal status. All foreign-born individuals use less care compared with native born, but the difference is even greater when comparing undocumented immigrants to native born individuals. In the LAFANS, spending was about \$1600 lower for both male and female undocumented immigrants compared to native born peers. Such evidence supports the notion that the undocumented population contributes little to Medicaid variation in spending across areas, although it cannot tell us about quality of care differences in Medicaid.

A 2010 study of spending in the MEPS confirms these results by comparing 1999-2008 spending on foreign-born noncitizens to native-born citizens (Stimpson, Wilson and Eschbach 2010). In every year between 1999 and 2008, spending was about half as high among non-citizens as among native-born citizens. Spending from public sources was also lower for noncitizens compared with immigrants.

The other evidence available regarding undocumented immigrants comes from a study of 2001 to 2004 claims for Emergency Medicaid services in North Carolina to immigrants not otherwise eligible for Medicaid (due to legal status or because they were in the U.S. for less than five years). Nearly all hospitalizations for immigrants (91 percent) were for childbirth or complications of childbirth. After excluding these hospitalizations, about one third of the remaining hospitalizations were for accidents or injuries. In North Carolina, disabled recipients were a small but rapidly growing share of Emergency Medicaid recipients. Spending on these disabled individuals grew 55 percent from 2001-2004.

6. Effects of PPACA on Medicaid, Uninsured, Undocumented Subgroups

The health and health care experience of all three populations addressed in this study, Medicaid enrollees, the uninsured, and undocumented immigrants, are closely related due to the overlap of the groups. Given the expansion of Medicaid to include an estimated 17 million additional enrollees (CBO, 2011), the composition of the Medicaid program and the remaining uninsured will change. There are numerous aspects of health reform and its potential effects on variation in Medicaid and the uninsured, but I limit my analysis to three areas: changes in access to insurance and how this varies by state and legal status, potential changes in access to primary care providers, as this varies by state, and the projected reductions of DSH payments to hospitals that serve a disproportionate share of low-income patients by \$57 billion between 2012-2021 (Congressional Budget Office 2011). Any effects on spending variation are likely to be indirect, however in each of

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these areas (increased demand for access with insurance coverage, increased demand for primary care providers, and reductions in DSH payments) the stress placed on local health care systems has the potential to disrupt care, and increase spending in areas that will experience disproportionate changes in health insurance, and subsequent demands for care.

Access to Health Insurance

CBO estimates that PPACA will increase the number of Medicaid and CHIP beneficiaries by about 17 million people by 2012. One reason that the expansion is projected to be so successful is because the federal share of costs to expand coverage to new populations is over 90%. It has long been known that such expansions will not happen evenly across states (Glied and Gould 2005). States with the highest numbers of uninsured will see the greatest fall in the numbers uninsured, but these same states tend to have disproportionate shares of the nation's undocumented immigrants. Thus, states witnessing the greatest shift into Medicaid are likely states that will still have larger uninsured populations than other parts of the US. Recent estimates of how Medicaid enrollment will change across states projects a 45.5% increase in Texas, in contrast to a modest 6% increase in New York, where childless adults and parents are both covered (Holohan and Headen 2010).

Another estimate of the uninsured after health reform projects characteristics of the uninsured population assuming all ACA provisions took effect in 2011 (Buettgens and Hall 2011). Of the uninsured after health reform, 22% would be undocumented immigrants. This masks substantial variation, of course, with only 12.2% of the uninsured comprised of undocumented immigrants in the East North Central region, in contrast to 29.2% of the uninsured in the Pacific region. Undocumented immigrants comprise a significant minority of uninsured groups after health reform in California (34.3%) and Texas (32.4%). Florida is close behind at 28.2%, while New York has a much smaller projected share, 15.6%. Because Medicaid covers emergency services for low-income undocumented immigrants (those with incomes under 138% of FPL), many uninsured, undocumented immigrants would have access to emergency services.

Factors that may affect variation in access to care after PPACA – PCP availability

Given the influx of newly insured patients, and a wealth of evidence that insurance expansions increase the demand for care (Baicker and Finkelstein 2011), some have raised the question of whether the current allocation of health providers across the US will match growing demand (Newhouse 2010). The Center for Studying Health System Change's 2008 national Health Tracking Physician Survey suggests that physician capacity could well dampen the ability of Medicaid expansions to improve access to care (Cunningham 2011). The study surveyed primary care physicians and specialists around the country about whether they accept new Medicaid patients. The authors then matched survey responses with information on the supply of primary care physicians in a state (by quartile). About 40% of PCPs reported that they were accepting new Medicaid patients in 2008, and this did not vary by quartile of PCP supply. However, the PCP supply was inversely related to rates of uninsurance (which is partially a function of restrictive Medicaid eligibility

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standards in a state). This means that the PCP available per Medicaid enrollee is lower in these low PCP states. The rate of uninsurance among the nonelderly ranges from 20.1% to 12.6% comparing states in the bottom quartile of PCP supply to top quartile states. Thus, states with relatively low supply of primary care physicians are expected to witness the greatest expansion in Medicaid enrollees due to health reform.

Cunningham (2011) estimates that low PCP states will witness a 38% rise in Medicaid enrollment, compared with a 15% rise in high PCP states. Furthermore, the ratio of Medicaid to Medicare physician fees in these low PCP states is relatively high (81.6% versus 54.8% in high PCP states), implying that the 2013 and 2014 requirement that states pay Medicaid providers at 100% of Medicare rates will have lower potential impact in low PCP states. Taken together, Cunningham uses these facts to estimate that the supply of PCPs accepting Medicaid patients will rise by only about 10% in low PCP states, compared with about one fourth in high PCP states.

Reductions in Disproportionate Share Payments to Hospitals and Variations in Access
The PPACA changed the formula for making DSH payments to hospitals serving high shares of low-income patients. In theory, this revenue should be recouped partially by the influx of newly insured patients. However, DSH payments tend to be crucial for the small number of hospitals in each state serving large shares of low-income patients. After health reform, if the remaining uninsured patients continue to concentrate in those safety net providers, and if the payments from newly insured patients do not offset losses in DSH dollars, safety net providers could struggle to deliver care or even to remain open. In this way, access to care for the remaining uninsured could be threatened if they are forced to close.

Although no current estimates are available about variation in the size of reductions in DSH payments by area, evidence from the experience in Massachusetts is instructive. The two major safety net providers, Boston Medical Center and Cambridge Hospital have undergone significant financial stress as lump sum payments to subsidize the disproportionate share of uncompensated care at these institutions were reduced after the state's health reform in 2006. However, visits to safety net providers, including outpatient departments of these hospitals rose after health reform (Ku et al. 2011). This same analysis by Ku and colleagues showed that the share of patients with health insurance at safety net providers rose dramatically after health reform in Massachusetts. However, the key insight from this paper was that safety net providers continue to serve disproportionate shares of Medicaid patients, for whom payment rates are lower compared with other insurers.

7. Conclusions

Several themes have emerged from reviewing the literature on variations in Medicaid, the uninsured, and undocumented immigrant populations. The Medicaid program experiences dramatic variation in spending that exceeds the variation in the Medicare program. This variation is driven in part by Medicaid's important role

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in financing long-term care services, which vary in structure, payment rates, eligibility, and cost across states, leading to widely different levels of spending on this service. Medicaid spending variation appears to be driven more by differences in intensity of service use rather than price. Finally, without adjustment for price differences across areas in Medicaid and Medicare, spending on these two programs appear to be unrelated. However, price adjusted spending in Medicaid is inversely related to price adjusted Medicare spending in an area.

There is evidence of dramatic differences in patterns and quality of care within Medicaid (use of prescription drugs, nursing home quality, number of inpatient admissions for ambulatory sensitive conditions). In nursing homes, higher quality has been linked to higher Medicaid per diem payments, although it is unclear how this contributes to overall spending. In the prevention of hospital admissions, higher payments in outpatient settings are correlated with lower use of inpatient settings, including ambulatory sensitive care. In the realm of pharmaceutical policy, differences in policies such as prior authorization can have dramatic impact on drug utilization and spending, though not in the case of drugs like opioids. In other words, the evidence to date is consistent with the notion that well designed payment policies might yield more health care we want for lower levels of spending. Future research in Medicaid could add a much richer picture of how and why quality of care and outcomes vary across states, which policies affect these things, and the spending implications of policies that affect quality and outcomes.

Among the uninsured, spread unevenly around the country, health reform promises to bring significant changes in access to insurance coverage. The potential benefits will be greatest where the uninsured are most prevalent, in states like California, Florida, and Texas. However, undocumented populations, excluded from all but emergency Medicaid services in health reform, will not obtain access to this coverage, such that the uninsured will continue to be concentrated in states that previously had high rates of uninsurance. Because of the patchwork underlying the financing and delivery of care for the uninsured, and even more so for undocumented populations, data do not currently give any real information about variation in access to care, spending on care, quality of care or outcomes across geographic areas. However, for the uninsured as a group, some existing data from household surveys, discharge data, and ambulatory care records could be exploited to learn more about care to this group. As the implementation of health reform moves forward, a more coordinated effort to track and analyze existing data, as well as efforts to include the uninsured, and to identify citizenship status in data collected would greatly help understand variations in spending and health outcomes. Health reform offers a great opportunity to learn whether and how different types of care delivered to the previously uninsured impact health outcomes and health care utilization for these populations. This can inform continued efforts to obtain better value in health care.

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Table 1. Characteristics of Non-institutionalized Medicaid Enrollees and Uninsured in 2010, Current Population Survey

		% of		
		Medicaid Enrollees	% of Uninsured	% of total Population
Age	Under 18	53.7%	14.6%	24.5%
	18-24	9.3	16.2	9.7
	25-34	8.7	23.7	13.6
	35-44	7.1	17.4	13.0
	45-64	13.8	26.5	26.4
	65 and older	7.4	1.6	12.8
Race/ethnicity	White, Non-Hispanic	44.1	46.3	64.5
	Black	22.4	16.3	12.8
	Asian	3.9	5.2	4.7
	Hispanic (any race)	27.1	30.7	16.3
Household Income	< \$25,000	46.4	32.4	19.6
	\$25,000-49,999	29.3	30.9	23.1
	\$50,000-\$74,999	12.4	17.7	18.7
	\$75,000 or more	12.0	19.0	38.5

Source: Based on data from the 2011 Current Population Survey, Annual Social and Economic Supplement. Medicaid data come from author calculations and remaining data were published by the Department of Health and Human Services (Assistant Secretary for Planning and Evaluation 2011). Note that the sample frame of the CPS does not include the institutionalized population.

Table 2: Income Eligibility for Medicaid for Parents, as % of Federal Poverty Levels, 2011

State	Income limit for parents	State	Income limit for parents
Arkansas	0.17	New Mexico	0.67
Alabama	0.24	Washington	0.74
Louisiana	0.25	Alaska	0.81
Missouri	0.25	Iowa	0.83
Texas	0.26	Nevada	0.88
Maine	0.27	Ohio	0.90
Virginia	0.31	South Carolina	0.93
Kansas	0.32	Hawaii	1.00
West Virginia	0.33	Arizona	1.06
Indiana	0.36	California	1.06
Idaho	0.39	Colorado	1.06
Oregon	0.40	Maryland	1.16
Mississippi	0.44	Delaware	1.20
Utah	0.44	Tennessee	1.27
Pennsylvania	0.46	Massachusetts	1.33
New Hampshire	0.49	New Jersey	1.33
North Carolina	0.49	New York	1.50
Georgia	0.50	Rhode Island	1.81
South Dakota	0.52	Connecticut	1.91
Wyoming	0.52	Illinois	1.91
Oklahoma	0.53	Vermont	1.91
Montana	0.56	Wisconsin	2.00
Nebraska	0.58	District of Columbia	2.07
Florida	0.59	Minnesota	2.15
North Dakota	0.59		
Kentucky	0.62		
Michigan	0.64		

Source: Kaiser Family Foundation, State Health Facts, Accessed November 25, 2011

Table 3: Studies of Medicaid Spending Variation – Aggregate Spending* Study

	Setting	Findings	Comments
(Holahan and Liska 1997)	1994 state Medicaid spending, separates state and federal share	State contributions to spending per enrollee vary much more than total state-level Medicaid spending due to varied matching rates.	Based on expense reports to Health Care Financing Administration
(Martin et al. 2007)	CMS state level spending from National Health Expenditures 2004	Wide variation in state level Medicaid spending – no further analysis of Medicaid	Health Accounts data may not appropriately assign spending
(Cooper 2009)	CMS state level spending from National Health Expenditures 2000, 2004	Documents zero correlation between Medicaid & Medicare state level spending, positive correlation of Medicaid state spending with quality indices	Health Accounts data may not appropriately assign spending, no adjustment for demographics or price
(Rettenmaier and Saving 2010)	CMS state level spending from National Health Expenditures 2004	Shows that ranking of state Medicaid spending per enrollee does not match rank of Medicaid enrollee share of population, no correlation between Medicaid & Medicare	Health Accounts data may not appropriately assign spending, no adjustment for demographics or price

DRAFT – Geographic variation in subgroups

(Autor, Chandra and Duggan 2011)	Adult, non-elderly beneficiaries eligible for Medicaid, Medicare, or both, due to disability in 2005 (11 states)	Coefficient of variation higher in Medicaid than Medicare Zero or negative correlation of Medicare-Medicaid Variation large in inpatient & long-term care Driven more by volume than price	Excludes managed care Only 11 states
Gilmer & Kronick (2011)/Gilmer & Kronick (2009)	Adult, Cash Assistance, Medicaid only disabled beneficiaries (appendix includes all Medicaid)	Wide variation across states – driven by volume of service, not price Zero correlation of Medicare/Medicaid across states Positive correlation across HRRs within states	Excludes managed care Excludes (AL, AZ, DE, MD, and ND) Does not compute actual correlation coefficients

Table 4: Correlation between Medicare & Medicaid State Level Spending

Sources	Medicaid	Medicare	Adjustment	Correlation*
(Cooper 2009), National Health Expenditures, Data from (Baicker and Chandra 2004)	CMS state Medicaid spending per enrollee, year 2000	Spending per beneficiary year 2000	None	0.0 (p>.05)
(Rettenmaier and Saving 2010)	CMS state Medicaid spending per enrollee, year 2004	Spending per beneficiary year 2004	Medicare adjusted for age, sex, race, and cost of living	0.12 (p>.05)
(Autor et al. 2011) 2005 CMS claims	Spending per dual eligible	Spending per dual eligible	None	-0.015 (p>.05)
	Spending per Medicaid-only disabled <65	Spending per Medicare-only disabled <65	None	.098 (p=.77)
(Gilmer and Kronick 2011; The Dartmouth Atlas Project 2011) Atlas 2005	Spending per enrollee	Spending per beneficiary	Medicaid eligibility category, Medicare age-sex-race	.086 (p=.80)
	Spending per enrollee	Spending per beneficiary	Medicaid – none, Medicare age-sex-race	-0.025 (p=.86)
	Spending per enrollee	Spending per beneficiary	Medicaid – eligibility category & price, Medicare age-sex-race & price	0.006 (p=.97)
	Spending per enrollee	Spending per beneficiary		-0.332 (p=.017)

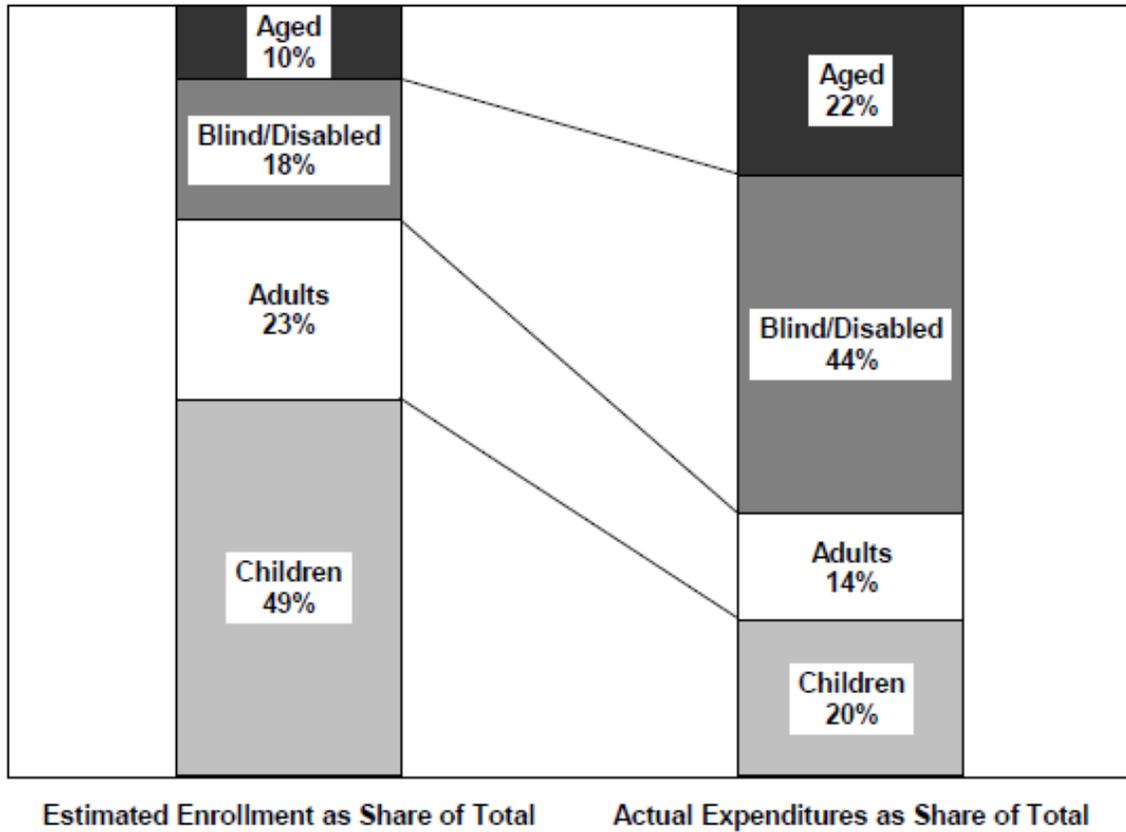
	Spending per cash assistance, Medicaid only enrollee	Spending per beneficiary	Medicaid – price, Medicare age-sex-race & price	-0.378 (p=.006)
(Bubolz et al. 2011) 2007 Medicare claims, Kaiser Medicaid Spending	Spending per <65 dual eligible	Spending per <65 dual eligible	Medicaid & Medicare adjusted for age-sex-race & price	IN PROGRESS

* With the exception of Cooper (2009) and Rettenmaier et al. (2010), the correlations reported here were computed by the author (Meara) using data from the specified sources.

Table 5: Data Sources Regarding Health Care Use & Insurance Coverage for Undocumented Immigrants

Source	Information	How is legal status ascertained?	Limitations
Los Angeles Family and Neighborhood Survey 2000-01, (Goldman, Smith and Sood 2005; Goldman et al. 2006)	Insurance status Utilization of care	Respondent report	Los Angeles area only
North Carolina Medicaid administrative claims data, (DuBard and Massing 2007)	Use of Emergency Medicaid Services	Undocumented immigrant status identified on Medicaid enrollment file	North Carolina only
Current Population Survey 1997-2004 (Zuckerman et al. 2011)	Health Insurance Status	Residual after estimating legal immigrants with Department of Homeland Security Data	No way to link to utilization of services
Medical Expenditure Panel Survey linked to National Health Interview Survey (Stimpson et al. 2010)	Health Service use, insurance status, immigration status	Since 1999, respondents self-report immigrant non-citizen status	Non-citizen does not identify legal status

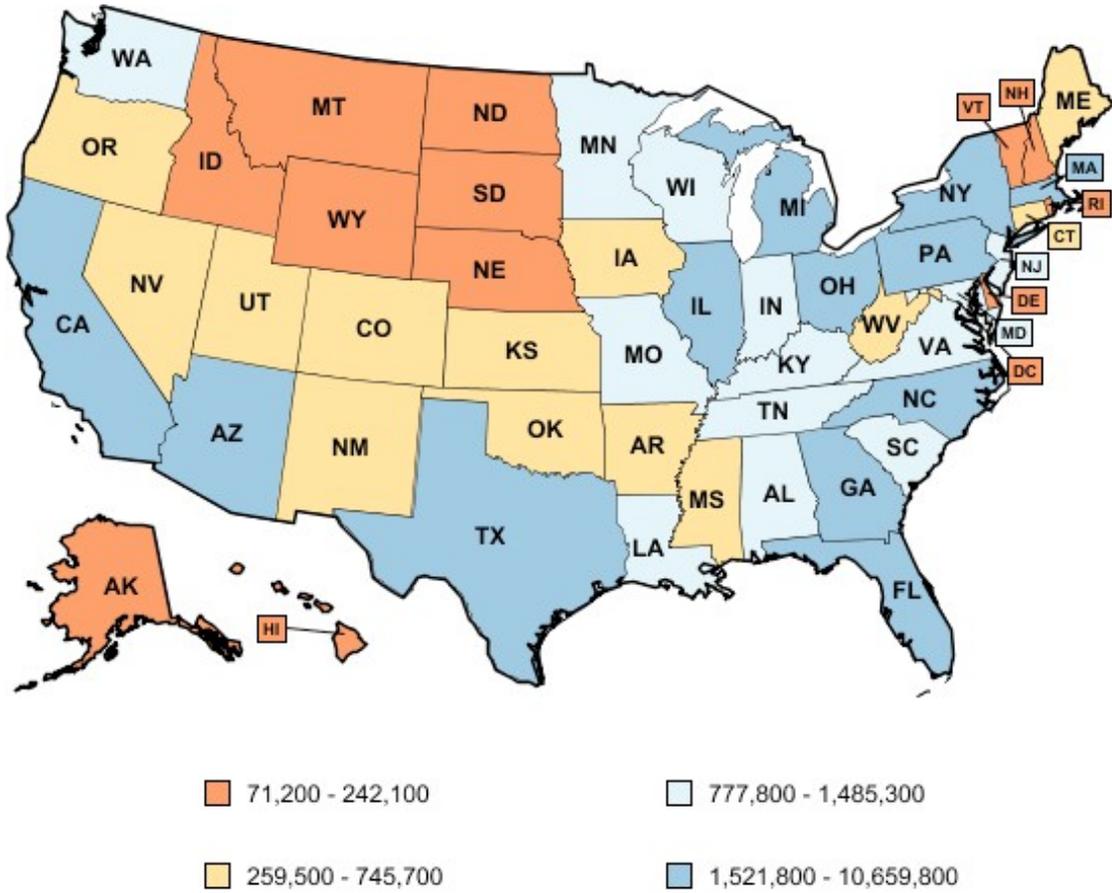
Figure 1: Medicaid Enrollment and Expenditures by Enrollment Group, as Share of Total, 2009



Source: CMS Office of the Actuary, “2010 Actuarial Report on the Financial Outlook for Medicaid”, U.S. Department of Health and Human Services.

Note: Totals and components exclude DSH expenditures, territorial enrollees and expenditures, and adjustments.

Figure 2: Total Medicaid Enrollment, FY 2008

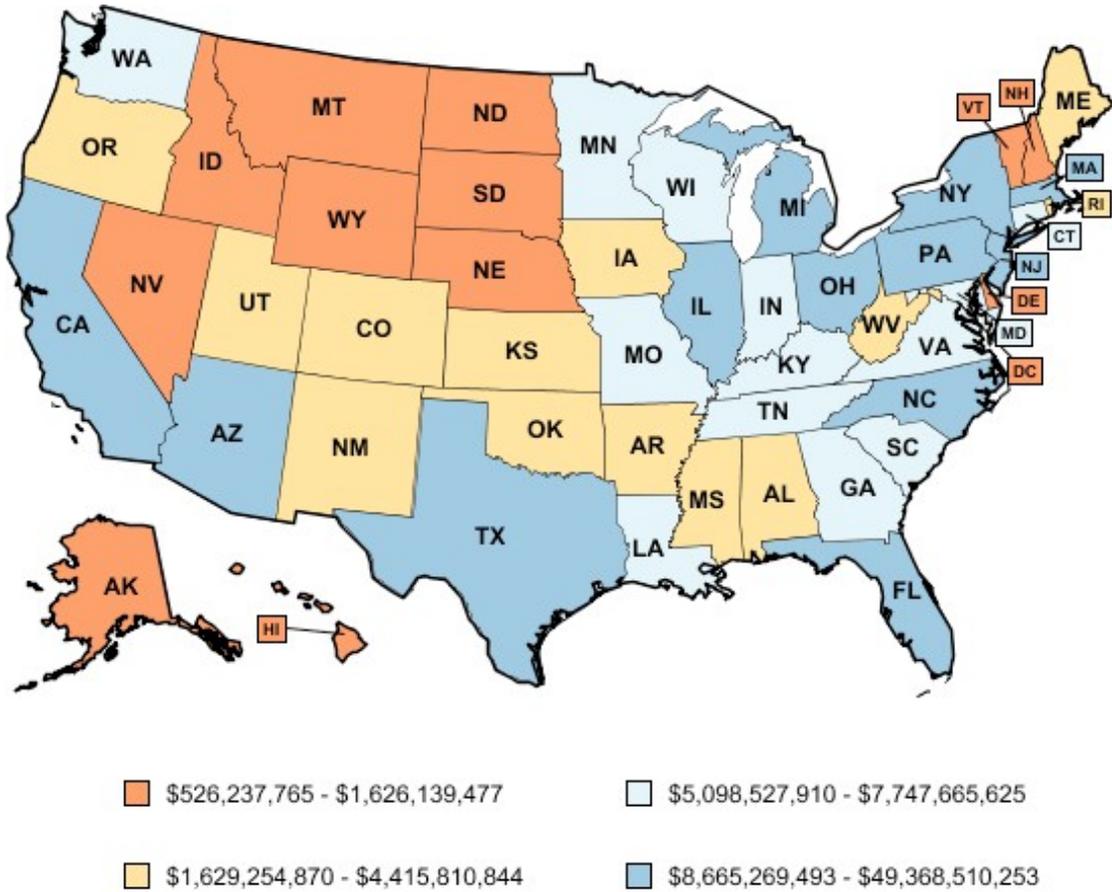


Total Medicaid Enrollment, FY2008



Source: Accessed at www.statehealthfacts.org on November 22, 2011.

Figure 3: Total Medicaid Spending, FY 2009

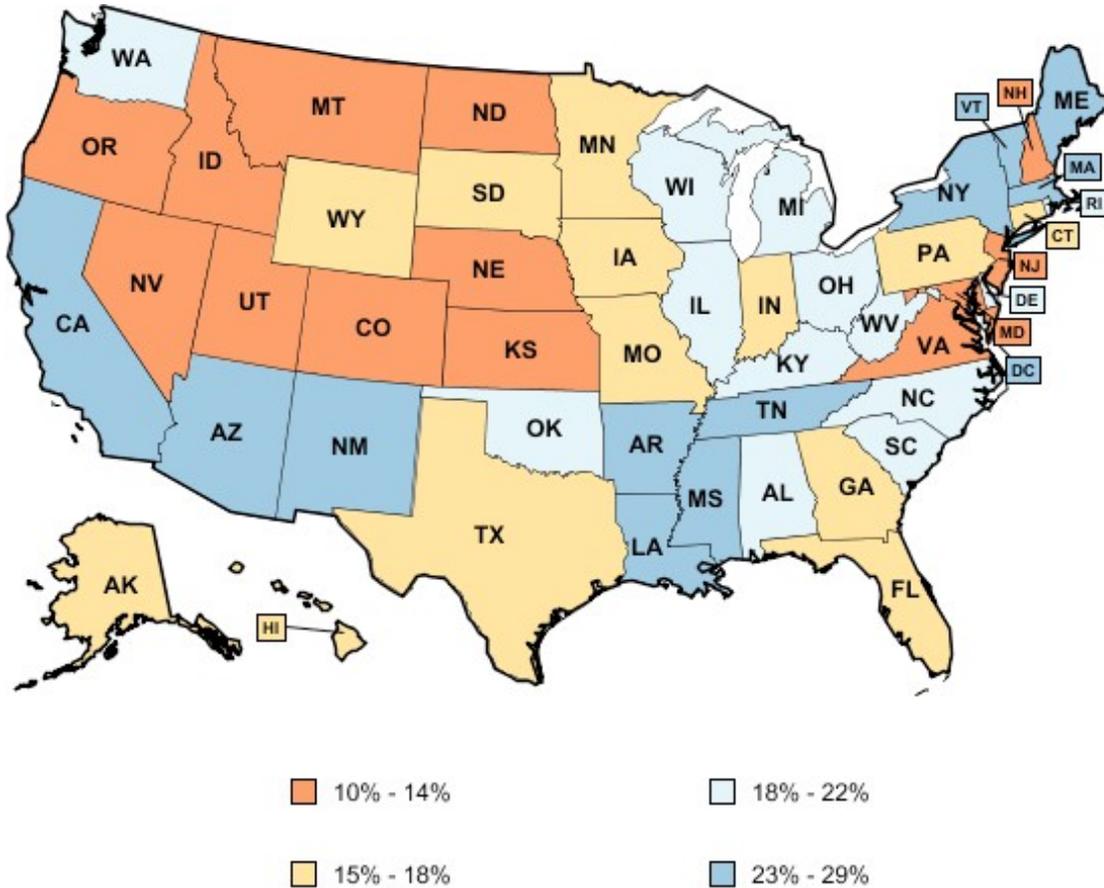


Total Medicaid Spending, FY2009



Source: Accessed at www.statehealthfacts.org on November 22, 2011.

Figure 4: Medicaid Enrollment as a Percent of Total Population



Medicaid Enrollment as a Percent of Total Population, 2008



Figure 6: Correlation between Medicare & Medicaid State Level Spending – with and without price adjustment

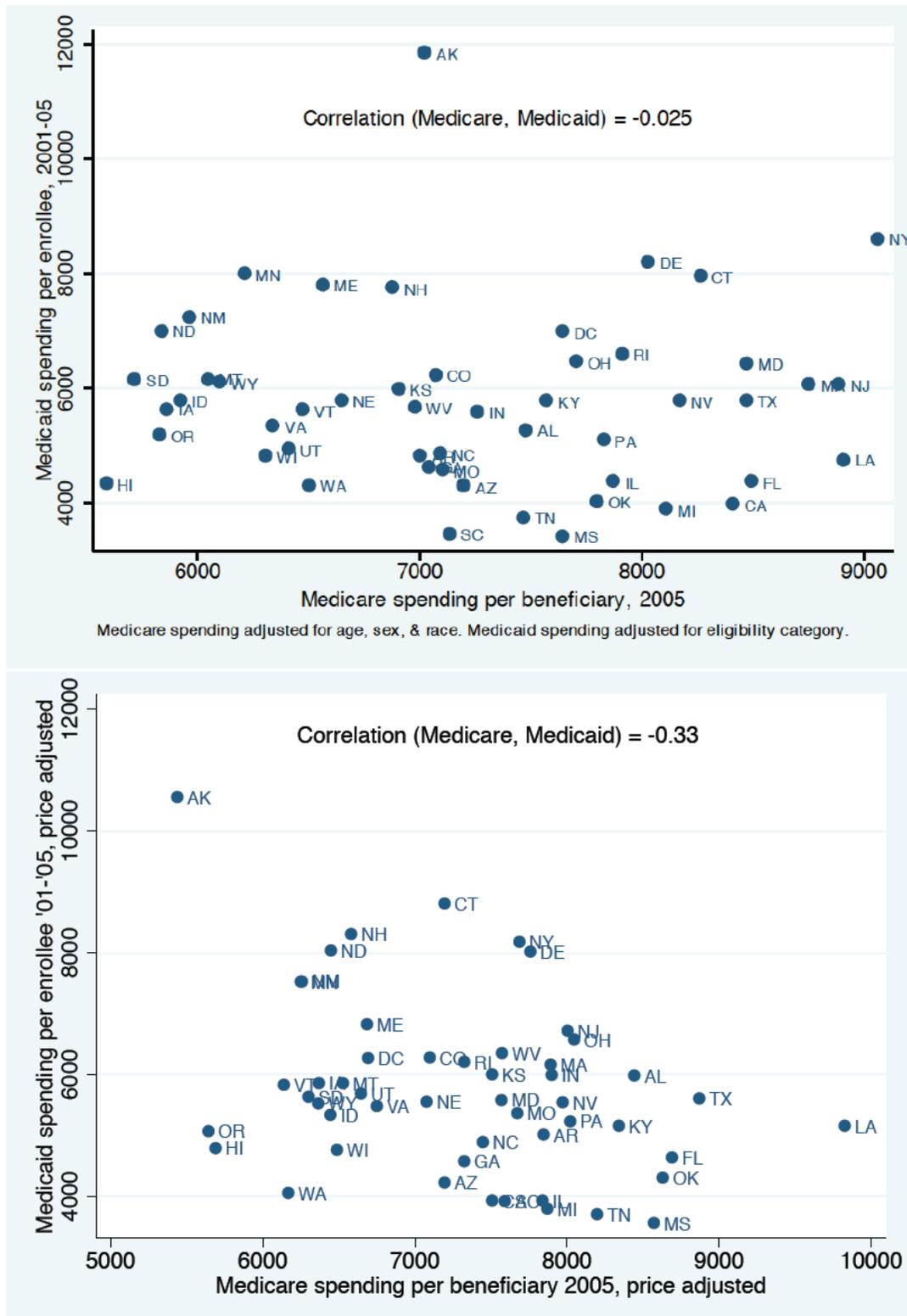
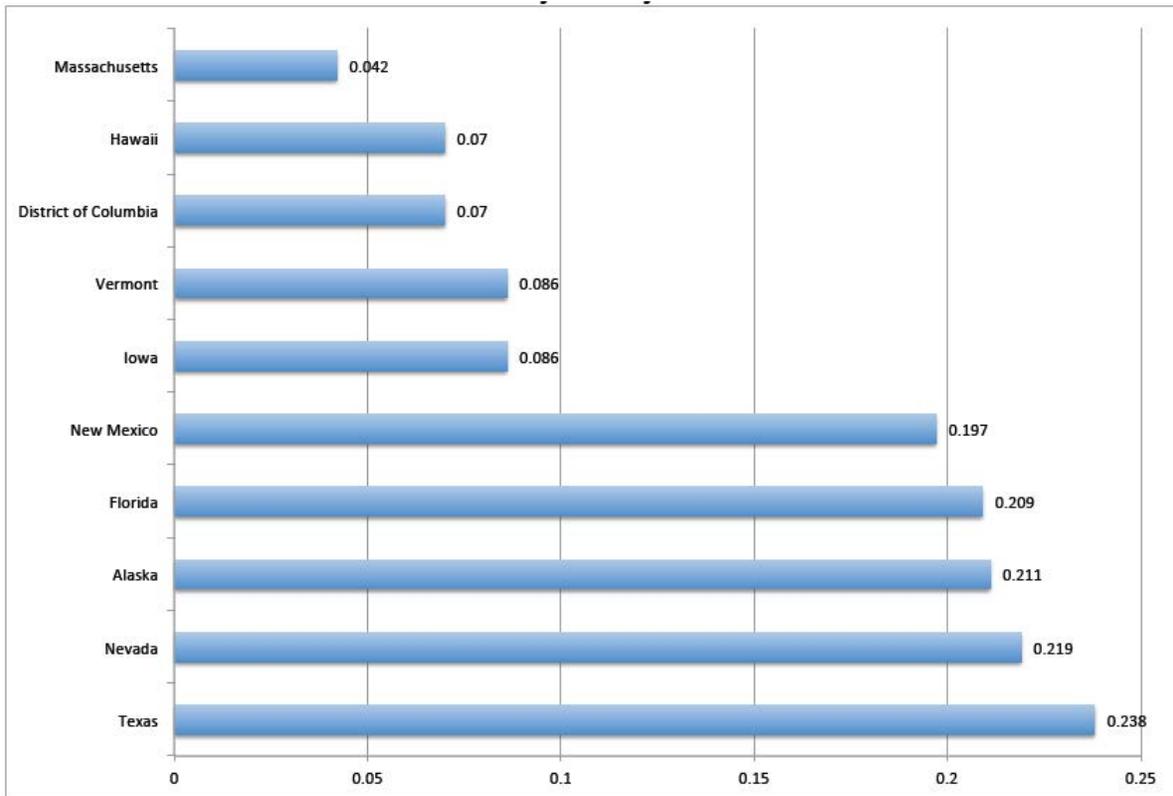
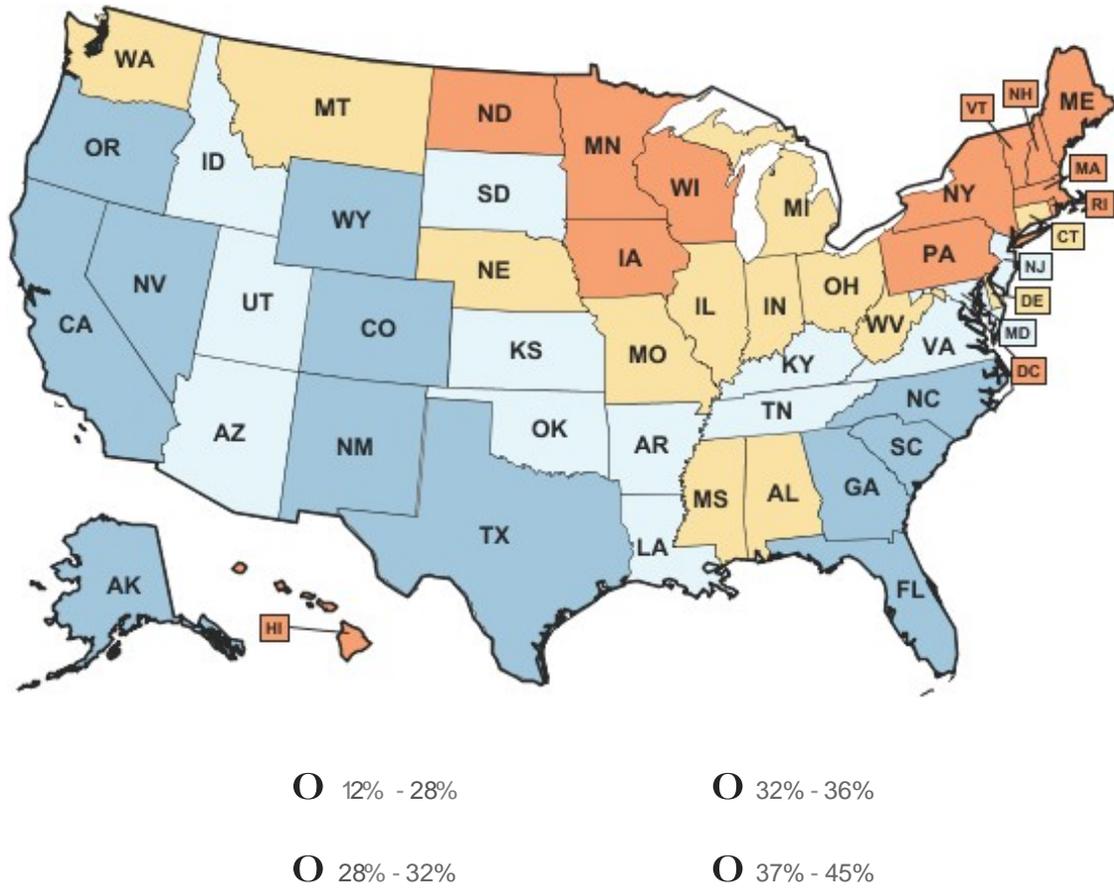


Figure 7: Share of State Population Without Health Insurance in Lowest and Highest Rate States, 2009 American Community Survey



Source: Data accessed from Kaiser Family Foundation, State Health Facts at www.statehealthfacts.org on November 22, 2011.

Figure 8. Uninsured Rates among Nonelderly Under 139% of Federal Poverty



Uninsured Rates for the Nonelderly by Federal Poverty Level (FPL), states (2008-2009), U.S. (2009): Under 139%



